City of
Santa Rosa

Jennings Avenue Pedestrian and Bicycle Rail Crossing Project

Draft EIR

State Clearinghouse #2013112019

October 17, 2014

Jennings Avenue Pedestrian and Bicycle Rail Crossing Project

Draft EIR

Prepared for:

City of Santa Rosa

100 Santa Rosa Avenue, Room 3

Santa Rosa, CA 95404

Prepared by:

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Santa Rosa, CA 95407

October 17, 2014

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1. Introduction and Summary

1.1 California Environmental Quality Act (CEQA)

CEQA requires that discretionary decisions by public agencies be subject to environmental review. The purpose of an environmental impact report (EIR) is to identify the significant effects of the project on the environment, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided (Section 21002.1[a]). Each public agency is required to mitigate or avoid the significant effects on the environment of projects it approves or carries out whenever it is feasible.

This Draft EIR has been prepared by the City of Santa Rosa, California (lead agency) for the Jennings Avenue Pedestrian and Bicycle Rail Crossing Project (Project) pursuant to CEQA and the CEQA Guidelines (California Administrative Code Section 15000 et seq.). Environmental effects of the Project that must be addressed include the significant effects of the Project, growth-inducing effects of the Project, and significant cumulative effects of past, present, and reasonably anticipated future projects.

This EIR is a project EIR. A Preferred Project and an alternative site design, called the Rail Overcrossing Alternative, are evaluated at the same level of detail in this EIR. Other alternatives included in the EIR are evaluated at a lower level of detail.

The City has applied for federal grant funding for the Project, and if such funding is received, will prepare documentation under the National Environmental Policy Act (NEPA). This EIR is not intended to be a joint CEQA/NEPA document. The City anticipates preparing separate NEPA documentation, if needed to receive the federal grant funds.

1.2 Background

The City of Santa Rosa proposes improvements at an existing, unofficial at-grade pedestrian and bicycle rail crossing at Jennings Avenue. The proposed Jennings Avenue bicycle and pedestrian rail crossing is identified in the City's General Plan, the Bicycle and Pedestrian Master Plan 2010, and specifically in Policy C-5.8 of the North Santa Rosa Station Area Specific Plan, which seeks to establish a pedestrian and bicycle rail crossing to link the eastern and western segments of Jennings Avenue.

Two types of pedestrian and bicycle rail crossings are evaluated in this EIR: an at-grade crossing, which would include crossing surfaces at the same elevation as the existing rail corridor; and an overcrossing, which would provide crossing surfaces over the rail corridor. To construct either an at-grade rail crossing or an overcrossing at Jennings Avenue, the City would be required to obtain approvals from the California Public Utilities Commission (CPUC), which is the State agency that regulates railroads and rail transit.

1.3 Public Scoping Process

On November 12, 2013, a Notice of Preparation (NOP) of an EIR was distributed (refer to Appendix A, Notice of Preparation). The NOP was mailed to property owners and occupants within 1,000 feet of the Project area, including the area surrounding the proposed rail crossing at Jennings Avenue, and the areas surrounding the existing rail crossings at W. Sixth Street, W. Seventh Street, and W. Eighth Street. The NOP was also distributed by the State Clearinghouse to the

reviewing State agencies, as well as local and regional agencies, triggering the start of a 30-day scoping period. On December 4, 2013, the City held a public Scoping Meeting, at the Finley Community Center, to solicit input regarding the issues that should be addressed in the EIR. The scoping period ended December 11, 2013. Approximately 50 written comments (via mail, email, and at the scoping meeting) were received during the scoping period.

1.4 Availability of the Draft EIR and Public Comment Period

The Draft EIR will be circulated for 45 days, from October 17, 2014 to December 1, 2014, to allow interested individuals and public agencies to review and comment on the document. A public hearing on the Draft EIR will be held before the Santa Rosa City Council to receive oral comments. The public hearing is tentatively scheduled for Tuesday, November 18, 2014, at 5:00 p.m. or shortly thereafter in the Council chambers. Please refer to the City's website for updates at www.SRCity.org. Written comments on the Draft EIR will be accepted by the City until 5:00 p.m. on December 1, 2014. Public agencies, interested organizations and individuals are encouraged to submit comments on the Draft EIR for consideration by the City. All written comments should be addressed to:

City of Santa Rosa
Attn: Jessica Jones, Senior Planner
Community Development Department
100 Santa Rosa Avenue, Room 3
Santa Rosa, CA 95404
Email: jjones@srcity.org

To facilitate understanding of the comments, please provide a separate sentence or paragraph for each comment, and note the page and chapter of the Draft EIR to which the comment is directed. This approach to commenting will help the City to provide a clear and meaningful response to each comment.

The Draft EIR is available for review online at

http://srcity.org/departments/communitydev/Pages/JenningsAvenuePedestrianandBicycleRailCrossingEIR.aspx, and at the following locations:

- Santa Rosa City Hall, 100 Santa Rosa Avenue, Community Development Department (Room 3) and City Manager's Office (Room 10)
- Transportation and Public Works Department, 69 Stony Circle;
- California Welcome Center, 9 Fourth Street;
- Northwest Santa Rosa Library, 150 Coddingtown Center; and
- Central Santa Rosa Library, 211 E Street.

1.5 Areas of Controversy and Key Issues to be Resolved

The scoping phase of the environmental review for the Project identified the following issues to be addressed in the EIR, which are summarized in Table 1-1 (Key Issues to be Resolved in the EIR) below:

Table 1-1 Key Issues to be Resolved in the EIR

Issues	Chapter / Section of EIR where Issue is Evaluated
Visual impacts of a rail overcrossing at Jennings Avenue and a rail closure in Railroad Square	3.1 – Aesthetics
Vehicular air emissions from re-routed traffic	3.2 – Air Quality
Impacts to the character and historic status of the West End Preservation District and Railroad Square Preservation District	3.4 – Cultural Resources
Increased greenhouse gas emissions	3.6 – Greenhouse Gas Emissions
Potential to disturb or transport known hazardous materials during construction	3.7 – Hazards and Hazardous Materials
Conflict with implementation and buildout of the Downtown Station Area Specific Plan	3.9 – Land Use and Planning
Increased noise in residential areas from re-routed traffic	3.10 – Noise
Impacts to traffic safety, congestion, emergency services, connectivity, businesses, public transit, bicycle and pedestrian facilities, and implementation of the Downtown Station Area Specific Plan.	3.12 – Transportation
Impacts from not constructing a rail crossing at Jennings Avenue, including conflict with implementation of the North Santa Rosa Station Area Specific Plan (No Project Alternative)	4 – Alternatives Description and Analysis

1.6 Summary of Significant Impacts and Proposed Mitigation Measures

Table 1-2 (Impact and Mitigation Summary) identifies, by environmental topic, the significant Project impacts and proposed mitigation measures. Impact significance is shown in the table below as follows:

- No Impact (NI)
- Less-than-Significant Impact (LS)
- Less-than-Significant Impact after Mitigation Incorporated (LSM)
- Significant and Unavoidable Impact with No Feasible Mitigation Available (SU)
- Significant and Unavoidable after Mitigation Incorporated (SUM)

Additional information about the impacts and mitigation measures can be found in Chapter 3, Environmental Setting, Impacts, and Mitigation Measures, of this EIR, as referenced for each topic.

Table 1-2 Impact and Mitigation Summary

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
AES-1: Would the Project have a substantial adverse effect on a scenic vista?	LS	LS	LS	LS	Not Applicable
AES-2: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?	LSM	LSM	LSM	SUM	Mitigation Measure AES-1: Tree Removal and Replacement (Rail Overcrossing Alternative) Mitigation Measure AES-2: Colorize and Texturize Overcrossing Concrete Surfaces (Rail Overcrossing Alternative) Mitigation Measure BIO-4: Compliance with Santa Rosa Tree Ordinance (Preferred Project and Rail Overcrossing Alternative) Mitigation Measure BIO-5: Minimize Impacts to Trees Adjacent to Construction Areas (Rail Overcrossing Alternative) CR-2: Protect Historic Resources (Preferred Project)
AES-3: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	LS	LS	LS	LS	Not Applicable

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
AES-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to visual resources?	LS	LS	LS	LS	Not Applicable
AQ-1: Would the Project violate an air quality standard or result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	LS	LS	LS	LS	Not Applicable
AQ-2: Would the Project expose sensitive receptors to substantial pollutant concentrations?	LS	LS	LS	LSM	AQ-1: Minimize Construction Equipment Emissions (Rail Overcrossing Alternative)
AQ-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to air quality?	LS	LS	LS	LS	Not Applicable

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
BIO-1: Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	LSM	LSM	LSM	LSM	BIO-1: Protection Measures during Construction for Special-status Birds (Preferred Project and Rail Overcrossing Alternative) BIO-2: Protection Measures for Special-status Bats during Tree Removal or Trimming (Preferred Project and Rail Overcrossing Alternative)
BIO-2: Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	LSM	LSM	LSM	LSM	BIO-3: Avoid Fill of Wetlands and Waters (Preferred Project and Rail Overcrossing Alternative)
BIO-3: Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	LSM	LSM	LSM	LSM	HWQ-2: Manage Construction Storm Water (Preferred Project and Rail Overcrossing Alternative) BIO-3: Avoid Fill of Wetlands and Waters (Preferred Project and Rail Overcrossing Alternative)

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
BIO-4: Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	LS	LS	LS	LS	Not Applicable
BIO-5: Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	LSM	LSM	LSM	LSM	BIO-4: Compliance with Santa Rosa Tree Ordinance (Preferred Project and Rail Overcrossing Alternative) BIO-5: Minimize Impacts to Trees Adjacent to Construction Areas (Rail Overcrossing Alternative)
BIO-6: Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	LSM	LSM	LSM	LSM	BIO-4: Compliance with Santa Rosa Tree Ordinance (Preferred Project and Rail Overcrossing Alternative)
BIO-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to biological resources?	LS	LS	LS	LS	Not Applicable
CR-1: Would the Project cause a substantial adverse change in the significance of an archaeological resource?	LSM	LSM	LSM	LSM	CR-1: Protect Archaeological Resources Discovered During Construction (Preferred Project and Rail Overcrossing Alternative)

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
CR-2: Would the Project cause a substantial adverse change in the significance of a historical resource?	LSM	LSM	SUM	LSM	CR-2: Protect Historic Resources (Preferred Project)
CR-3: Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	LS	LS	LS	LSM	CR-3: Protect Paleontological Resources During Construction Activities (Rail Overcrossing Alternative)
CR-4: Would the Project disturb any human remains, including those interred outside of formal cemeteries?	LSM	LSM	LSM	LSM	CR-4: Protect Human Remains if Encountered During Construction (Preferred Project and Rail Overcrossing Alternative)
CR-C-1: Would the Project result in a cumulatively considerable contribution to a cumulative impact?	LS	LS	LS	LS	Not Applicable
GEO-1: Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking or seismic-related ground failure, including liquefaction?	LS	LS	LS	LSM	GEO-1: Conduct a Geotechnical Study and Implement Recommendations (Rail Overcrossing Alternative)
GEO-2: Would the Project result in substantial soil erosion or the loss of topsoil?	LS	LS	LS	LS	Not Applicable

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
GEO-3: Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in lateral spreading, subsidence, liquefaction or collapse?	LS	LS	LS	LSM	GEO-1: Conduct a Geotechnical Study and Implement Recommendations (Rail Overcrossing Alternative)
GEO-4: Would the Project be located on expansive soil, creating substantial risks to life or property?	LS	LS	LS	LSM	GEO-1: Conduct a Geotechnical Study and Implement Recommendations (Rail Overcrossing Alternative)
GEO-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to geology and soils?	NI	NI	NI	NI	Not Applicable
GG-1: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	LSM	LS	LS	LS	TR-3: Revise Proposed Bicycle Route on Sixth Street (Preferred Project with Closure at W. Sixth Street)
GG-2: Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	LSM	NI	NI	NI	TR-3: Revise Proposed Bicycle Route on Sixth Street (Preferred Project with Closure at W. Sixth Street)

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
GG-C-1: Would the Project result in a cumulative considerable contribution to a significant cumulative impact relative to greenhouse gas emissions?	LSM	LS	LS	LS	TR-3: Revise Proposed Bicycle Route on Sixth Street (Preferred Project with Closure at W. Sixth Street)
HAZ-1: Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	LS	LS	LS	LS	Not Applicable
HAZ-2: Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, or a known hazardous site, or would the Project create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	LSM	LSM	LSM	LSM	HAZ-1: Health and Safety Plan (Preferred Project and Rail Overcrossing Alternative) HAZ-2: Hazardous Materials Management Plan (Preferred Project and Rail Overcrossing Alternative)
HAZ-3: Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	LS	LS	LS	LS	Not Applicable

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
HAZ-C-1: Would the Project result in a cumulative considerable contribution to a significant cumulative impact related to hazards or hazardous materials?	LS	LS	LS	LS	Not Applicable
HWQ-1: Would the Project violate any water quality standards or waste discharge requirements?	LSM	LSM	LSM	LSM	HWQ-1: Manage Construction Dewatering (Preferred Project and Rail Overcrossing Alternative) HWQ-2: Manage Construction Storm Water (Rail Overcrossing Alternative)
HWQ-2: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or lowering of the local groundwater table level.	LS	LS	LS	LS	Not Applicable
HWQ-3: Would the Project provide substantial additional sources of polluted runoff or otherwise substantially degrade water quality?	LS	LS	LS	LSM	HWQ-3: Manage Drilling Fluids (Rail Overcrossing Alternative)

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
HWQ-4: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site, or increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or exceed the capacity of existing or planned stormwater drainage systems?	LS	LS	LS	LS	Not Applicable
HWQ-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to hydrology and water quality?	LS	LS	LS	LS	Not Applicable
LU-1: Would the Project physically divide an established community?	LS	LS	LS	LS	Not Applicable
LU-2: Would the Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	SU	SU	SU	NI	Not Applicable

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
LU-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to land use?	NI	NI	NI	NI	Not Applicable
NO-1: Would the Project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	SUM	SUM	SUM	LS	NO-1: Implement Quiet Zones (Preferred Project)
NO-2: Would the Project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	LSM	LSM	LSM	LS	NO-2: Reduce Vibration Levels (Preferred Project)
NO-3: Would the Project result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	SUM	SUM	SUM	LS	NO-1: Implement Quiet Zones (Preferred Project)
NO-4: Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	LSM	LSM	LSM	LSM	NO-3: Reduce Daytime Construction-related Noise (Preferred Project and Rail Overcrossing Alternative) NO-4: Reduce Construction Noise (Preferred Project and Rail Overcrossing Alternative)

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
NO-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to noise?	SUM	SUM	SUM	LS	NO-1: Implement Quiet Zones (Preferred Project)
PSR-1: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, and/or other public facilities?	LS	LS	LS	LS	Not Applicable
PSR-2: Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	LS	LS	LS	NI	Not Applicable
PSR-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to public services and recreational resources?	LS	LS	LS	NI	Not Applicable

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
TR-1: Would the Project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the vehicular circulation system?	LSM	LSM	LSM	LSM	TR-1: Traffic Control Plan (Preferred Project and Rail Overcrossing Alternative) TR-2: Facilitate Truck Movement (Preferred Project with Closure at W. Sixth Street or W. Seventh Street)
TR-2: Would the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	LS	LS	LS	LS	Not Applicable
TR-3: Would the Project result in inadequate emergency access?	LSM	LSM	LSM	LSM	TR-1: Traffic Control Plan (Preferred Project and Rail Overcrossing Alternative)
TR-4: Would the Project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	LSM	LS	SU	NI	TR-3: Revise Proposed Bicycle Route on Sixth Street (Preferred Project with Closure at W. Sixth Street) TR-4: Implement Wilson Street Corridor Improvements (Preferred Project with Closure at W. Eighth Street)
TR-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to transportation?	LSM	LSM	LSM	LSM	C-TR-1: Reduce Conflicts with SMART Pathway during Construction (Preferred Project and Rail Overcrossing Alternative)

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	Mitigation Measure
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
UT-1: Would the Project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, or result in a determination by the wastewater treatment provider which services the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	LSM	LSM	LSM	LSM	HWQ-1: Manage Construction Dewatering (Preferred Project and Rail Overcrossing Alternative)
UT-2: Would the Project be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs, and will the Project comply with federal, State and local statutes and regulations related to solid waste?	LS	LS	LS	LS	Not Applicable
UT-3: Would the Project result in potential damage to or temporary disruption of existing utilities?	LS	LS	LS	LSM	UT-1: Utility Relocation Coordination (Rail Overcrossing Alternative)
UT-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to utilities?	LS	LS	LS	LS	Not Applicable

Notes: NI = No Impact
LS = Less than Significant
LSM = Less than Significant with Mitigation
SU = Significant and Unavoidable
SUM = Significant and Unavoidable with Mitigation

2. Project Description

A Preferred Project, as well as an alternative site design, are evaluated at the same level of detail in this EIR. The Preferred Project is an at-grade pedestrian and bicycle rail crossing and the alternative site design is a pedestrian and bicycle rail overcrossing. The Preferred Project and the Rail Overcrossing Alternative would both provide a California Public Utilities Commission (CPUC)-approved pedestrian and bicycle rail crossing at Jennings Avenue that would meet the overall Project objectives. Both the Preferred Project and the Rail Overcrossing Alternative are described in detail below. Other alternatives included in the EIR are evaluated at a lower level of detail and are described in Chapter 4, Alternatives Description and Analysis.

2.1 Project Location

The Project would be located within the City of Santa Rosa, Sonoma County, approximately 45 miles north of San Francisco. Project components would be located in two areas of Santa Rosa (see Figure 2-1 [Regional Map]). A proposed pedestrian and bicycle rail crossing would be located where Jennings Avenue approaches the Sonoma-Marin Area Rail Transit (SMART) rail corridor. The closest cross streets are Herbert Street to the east and N. Dutton Avenue to the west. The proposed rail crossing would be located within the planning area of the North Santa Rosa Station Area Specific Plan (Santa Rosa 2012). The Preferred Project would also include the closure of an existing at-grade rail crossing at either W. Sixth, W. Seventh, or W. Eighth Street, located just west of Wilson Street, approximately one mile southeast of the proposed crossing at Jennings Avenue. The rail crossing closure would be located within the planning area of the Downtown Station Area Specific Plan (Santa Rosa 2007).

2.2 Project Objectives

The City's General Plan 2035 and Bicycle and Pedestrian Master Plan 2010 identify Jennings Avenue as a bicycle boulevard where it crosses the rail corridor (Santa Rosa 2009, 2010). Also, the City's North Santa Rosa Station Area Specific Plan identifies a pedestrian and bicycle rail crossing at Jennings Avenue as part of the Plan's circulation system and pedestrian and bicycle network (Santa Rosa 2012, Figures 6.1 and 6.2). The proposed rail crossing would, therefore, help implement the City's bicycle and transportation planning efforts. More specifically, the Project would implement the North Santa Rosa Station Area Specific Plan's primary objective which is to "support future rail transit by increasing the number of residents and employees within walking distance of the SMART station by improving pedestrian, bicycle, auto, and transit connections, increasing residential density, promoting economic development, and enhancing aesthetics and quality of life" (Santa Rosa 2012, p. 1-5).

Specific Project objectives are:

- Construct a CPUC-approved pedestrian and bicycle rail crossing at Jennings Avenue;
- Construct an efficient and convenient crossing for pedestrians and bicyclists at Jennings Avenue, in accordance with the Americans with Disabilities Act (ADA) and applicable federal and State regulations;
- Provide a pedestrian and bicycle link across the SMART rail corridor at Jennings Avenue to enable Jennings Avenue to become a bicycle boulevard as approved in the General Plan

2035, the Bicycle and Pedestrian Master Plan 2010, and the North Santa Rosa Station Area Specific Plan; and

- Provide a pedestrian and bicycle connection from the planned SMART pathway to Jennings Avenue both to the east and west of the rail corridor.

2.3 Background and Existing Uses

SMART owns the rail corridor in Santa Rosa and will provide passenger rail service, however, the North Coast Railroad Authority (NCRA) is responsible for the operation of freight service. The rail corridor is currently active for freight rail service, though no set schedule exists in the Santa Rosa segment (SMART 2013). SMART passenger train service is not currently in operation, but testing of grade crossing signal equipment began in 2014, train testing is anticipated to begin in 2015, and regular service is expected to begin in 2016 through Santa Rosa (SMART 2013).

Pedestrians and bicyclists currently cross the rail corridor at Jennings Avenue (see detailed use data below), even though it is not an official crossing permitted by the CPUC. Existing railroad improvements at this location consist of raised ballast made of crushed stone supporting two sets of parallel railroad corridors. No pedestrian gates or other crossing-related improvements exist at the site.

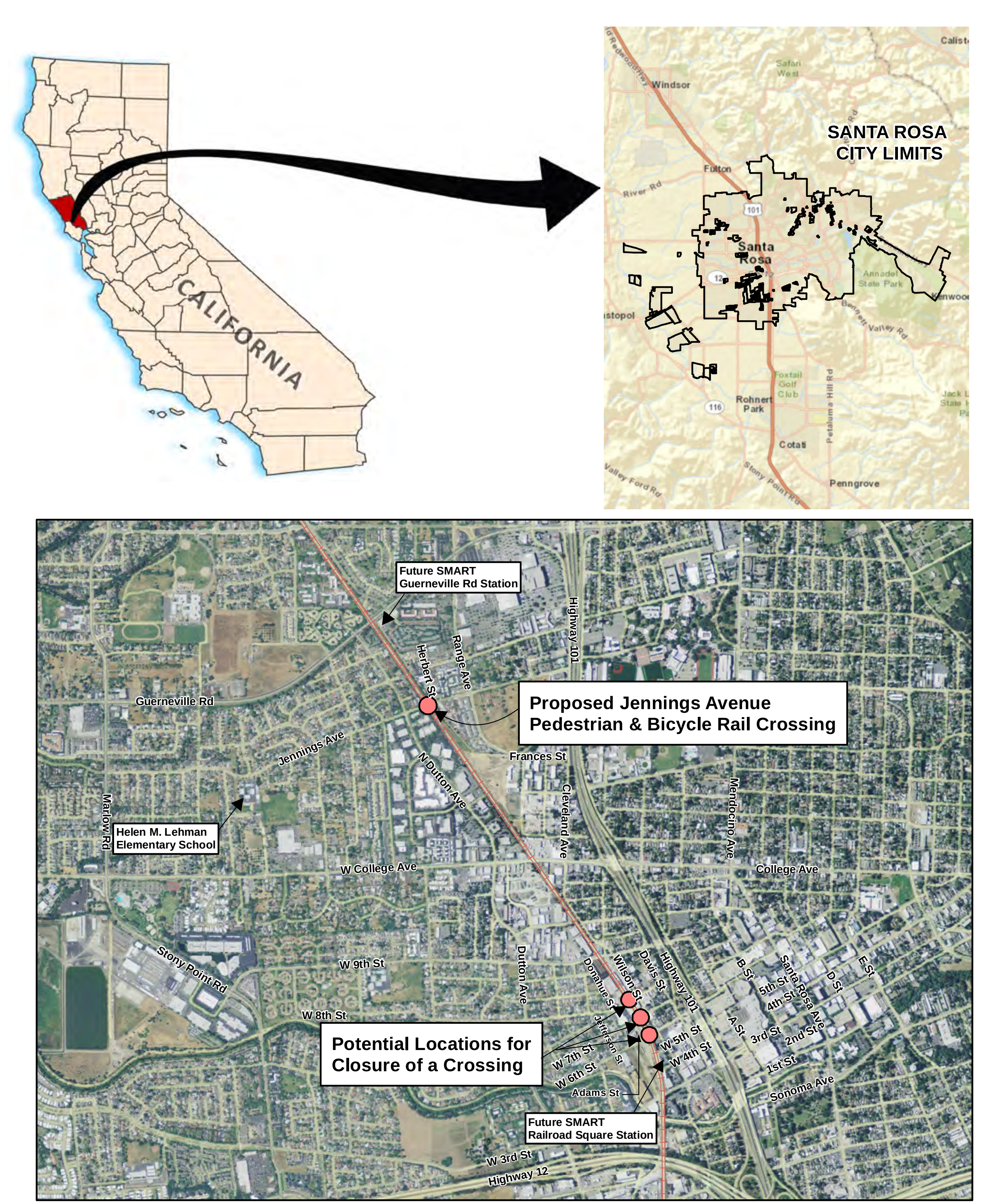
Jennings Avenue currently terminates on either side of the rail corridor, and guard rails block the end of Jennings Avenue on either side to prevent vehicular access. On the west side of the rail corridor, a partial sidewalk is present on the north side of Jennings Avenue, while on the east side of the rail corridor, sidewalks are present on both sides of Jennings Avenue. No dedicated bicycle lanes exist along Jennings Avenue in the vicinity of the rail corridor.

A waterway with riparian vegetation and trees is located on the east side of the rail corridor between the tracks and Jennings Avenue. The Citywide Creek Master Plan identifies the waterway as Steele Creek, which flows north to Guerneville Road, then west to Piner Creek (Santa Rosa 2013, Paulin and Piner Creeks Map 3). The Sonoma County Water Agency owns and maintains the waterway. Pedestrians and bicyclists currently cross the waterway at a storm drain box culvert.

A Sonoma County Water Agency high pressure aqueduct (Santa Rosa Aqueduct) is located below the ground parallel to the rail corridor on the west side. City pipelines connecting to the aqueduct are located beneath the Project site.

W. Sixth, W. Seventh, and W. Eighth Streets, where one rail crossing closure would be required as part of the Preferred Project, currently provide at-grade crossings of the rail corridor for vehicles, pedestrians and bicyclists (see detailed use data below). W. Sixth, W. Seventh, and W. Eighth Streets are two-lane roads with sidewalks on either side. No sidewalks or improved pathways currently cross the rail corridor at these sites, however, pedestrians and bicyclists can use the roadway surface. Railroad improvements at these locations include two sets of parallel railroad corridors. Standard railroad warning devices are in place at each vehicular crossing, but the warning devices are not active.

On October 10, 2013, pedestrian and bicycle counts at Jennings Avenue and the rail corridor were collected over a period of eight hours, including morning (7 a.m. – 9 a.m.), midday (11 a.m. – 1:00 p.m.), after school (1:30 p.m. – 3:30 p.m.), and evening periods (4:00 p.m. – 6:00 p.m.).



Paper Size ANSI A

0 0.225 0.45 Mile

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere

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City of Santa Rosa

Jennings Avenue Pedestrian and Bicycle Rail Crossing EIR

Job Number	8410868
Revision	A
Date	22 Jul 2014

Regional Map

Figure 2-1

2235 Mercury Way, Santa Rosa, CA T 707-523-1010 F 707-527-8679 W www.ghd.com

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A total of 25 bicyclists and 91 pedestrians used the crossing over the observed periods. Ninety percent or more of the bicyclists were categorized as recreational users. Of the pedestrians, approximately 30 percent were characterized as school related trips.

On October 10, 2013, pedestrian and bicycle counts were also collected at W. Sixth, W. Seventh, and W. Eighth streets and the SMART rail corridor over a period of eight hours, including morning (7:00 a.m. – 9:00 a.m.), midday (11:00 a.m. – 1:00 p.m.), after school (1:30 p.m. – 3:30 p.m.), and evening periods (4:00 p.m. – 6:00 p.m.). At W. Sixth Street, 153 bicyclists and 508 pedestrians were observed using the crossing. At W. Seventh Street, 165 bicyclists and 329 pedestrians were observed using crossing. And at W. Eighth Street, 154 bicyclists and 185 pedestrians were observed using the crossing. Approximately eighty percent or more of the bicyclists and pedestrians using the crossings at W. Sixth, W. Seventh, and W. Eighth streets were characterized as recreational users.

2.4 Preferred Project, an At-grade Rail Crossing

The Preferred Project would consist of an at-grade pedestrian and bicycle rail crossing at Jennings Avenue. To construct an at-grade rail crossing at Jennings Avenue, the City would be required to obtain approvals from the CPUC, which is the State agency that regulates railroads and rail transit. In the event that the City constructs a new at-grade rail crossing at Jennings Avenue, CPUC staff has suggested that the City close one or two other rail crossings within the City, namely at W. Sixth, W. Seventh, or W. Eighth Street, so that the total number of permitted at-grade rail crossings in the City would stay the same or be reduced (CPUC 2012). Therefore, as part of the Preferred Project, the City has included the potential closure of one existing at-grade rail crossing elsewhere in the City. In accordance with direction from CPUC staff, this EIR evaluates the potential closure of an existing at-grade rail crossing at either W. Sixth, W. Seventh, or W. Eighth Street. In the event that CPUC staff require closure of more than one existing at-grade rail crossing, the City would not pursue the Preferred Project (Santa Rosa 2014).

2.4.1 Characteristics of Preferred Project

Construction of an at-grade pedestrian and bicycle rail crossing at Jennings Avenue would include installation of crossing surfaces at-grade across the SMART rail corridor. The conceptual layout of the at-grade rail crossing is shown on Figure 2-2 (At-grade Rail Crossing Conceptual Design). A visual simulation of an at-grade rail crossing at Jennings Avenue is shown in Section 3.1 Aesthetics, Figure 3.1-5 (At-grade Rail Crossing – Visual Simulation).

The design of the at-grade rail crossing would be ADA-compliant and would include warning devices in compliance with federal and State regulations, including the CPUC General Order No. 75-D regulations for warning devices for at-grade rail crossings, Caltrans Highway Design Manual path standards, California Manual of Uniform Traffic Control Devices, and the Federal Highway Administration Railroad-Highway Grade Crossing Handbook. Applicable portons of the Preferred Project would also be designed in accordance with the California Building Code (California Code of Regulations [CCR], Title 24, Part 2).

ADA-compliant warning devices and pathway improvements for the at-grade rail crossing would include flashing light signal assemblies with automatic gate arms, warning signs, pedestrian gates, hand rails, paving, walkways, and fencing. Warning devices would indicate when a train was approaching and would trigger gate arms to block pedestrian access.

Because the site consists of a double track, electronic signs would be installed to notify pedestrians if a second train is coming in close proximity to the first crossing, to the extent feasible given existing technologies. Exit swing gates would be provided to allow pedestrians to exit the track, if the gate arms were activated while a pedestrian was crossing. Power and fiber optic cable would be available from within the rail corridor for the crossing equipment. Vandal-resistant fencing, such as wrought-iron fencing, five to six feet in height would be installed to direct pedestrians to the crossing.

The pathway leading to the crossing would be asphalt or concrete and a minimum of 8-feet wide with 2-foot shoulders on either side. On the west side of the rail corridor, the pathway would align with the sidewalk on the northern side of Jennings Avenue, and would open to a portion of the street for bicycle traffic. On the east side of the rail corridor, the pathway would cross Steele Creek at the location of an existing box culvert. The pathway would then align with the sidewalk on the northern side of Jennings Avenue east of the rail corridor. A new street lamp would also be installed on the east side of the rail corridor near the northwest corner of Herbert Avenue and Jennings Avenue.

Closure of an at-grade rail crossing at W. Sixth, W. Seventh, or W. Eighth Streets would include removal of the existing roadway crossing surfaces, such as asphalt pavement and concrete panels, from the rail corridor (see Figure 2-3 [Alternative Locations for Closure of One Rail Crossing]). Following removal of the crossing surfaces, the railroad track ballast and railroad ties would be restored, as necessary. A vehicle guard rail or other type of traffic barricade would be installed, and vandal-resistant fencing, such as wrought-iron fencing, 6 to 8 feet in height, would be installed across the roadway closure. Work would also require re-striping and installation of warning signs in the immediate area.

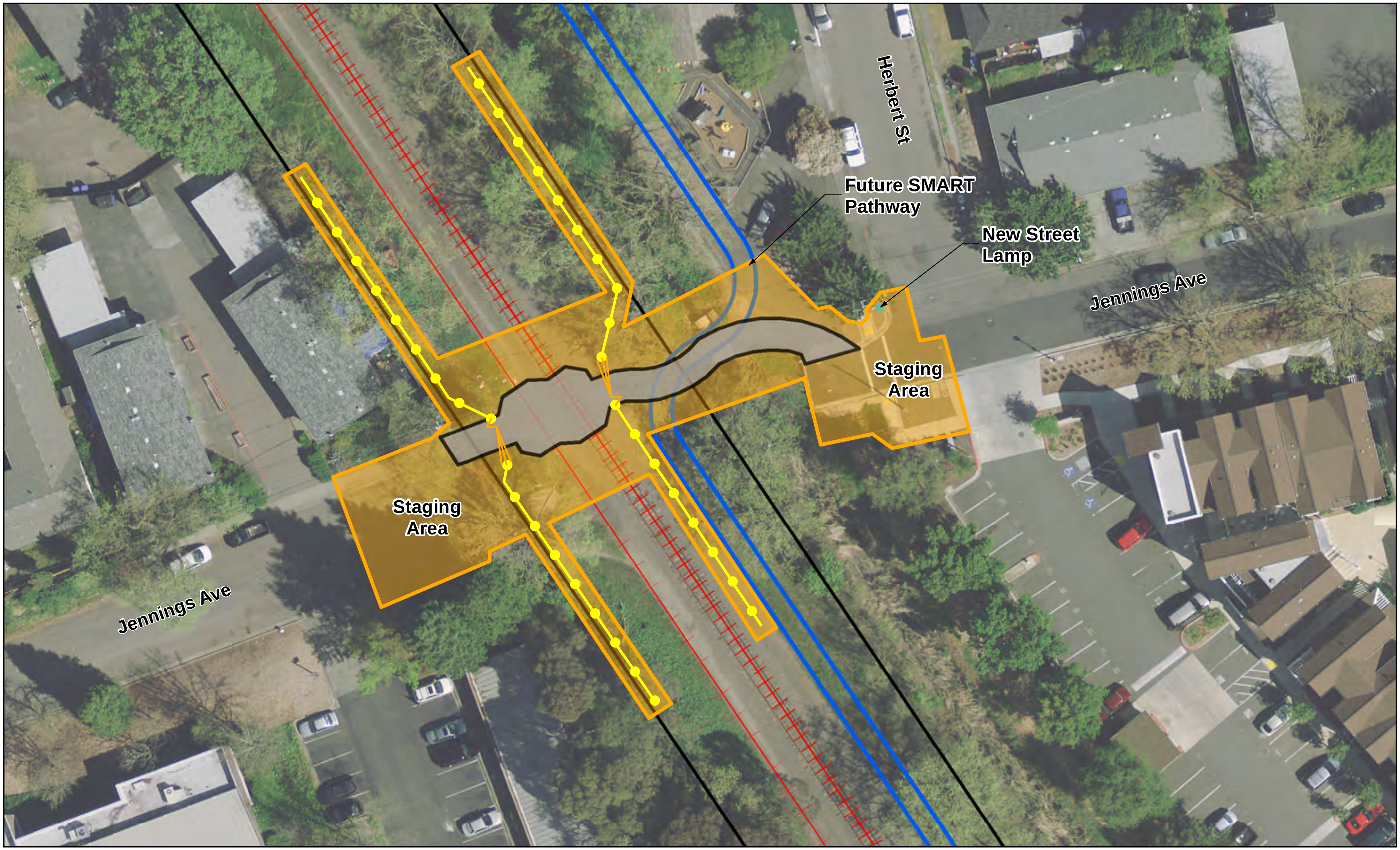
2.4.2 Construction of the Preferred Project

Construction of the Preferred Project would begin with closure of an at-grade rail crossing at either W. Sixth, W. Seventh, or W. Eighth Street. Upon completion of the rail crossing closure, construction of an at-grade rail crossing at Jennings Avenue would begin.

Construction of the Preferred Project would disturb approximately 0.57 acre, which would include 0.35 acre for construction of the at-grade rail crossing at Jennings Avenue, and 0.22 acre for closure of a rail crossing at either W. Sixth, W. Seventh, or W. Eighth Street.

At Jennings Avenue, the crossing surfaces to be installed across the tracks would likely be pre-cast elements installed using a small crane or boom truck. The flashing light signal assemblies with automatic gate arms would then be installed, which would include installation of supporting anchor bolts and concrete pads. Electrical conduits would be extended at the site and connected to the new rail crossing warning devices. Shallow trenching, approximately 30-inches deep, would also be required for an electrical conduit to be extended for a new street lamp to be installed on the east side of the rail corridor near the northwest corner of Jennings Avenue and Herbert Avenue.

Fill would be imported to construct the pedestrian and bicycle pathway from Jennings Avenue on the eastern side of the rail corridor across the creek. The area of the proposed pathway would be graded to create a smooth surface, and an approximately 6-inch layer of base rock would be installed and compacted, followed by the application of asphalt binder and pavement. If the pathway is constructed of concrete, the concrete would be cast-in-place and finished via vibration and trimming. Following completion of construction, chanellization fencing would be installed parallel to the rail corridor to direct pedestrian and bicycle users to the rail crossing.



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LEGEND

- Fencing
- Conceptual Rail Crossing and Path
- Signal Arm
- Construction Area Boundary
- New Street Lamp
- Future SMART Pathway
- SMART Rail Corridor
- Main Track
- Siding Track

GHD

City of Santa Rosa

City of Santa Rosa
Jennings Avenue Pedestrian and Bicycle
Rail Crossing EIR

Job Number 8410868
Revision 0
Date 13 Aug 2014

Preferred Project - At-grade Rail Crossing - Conceptual Design

Figure 2-2

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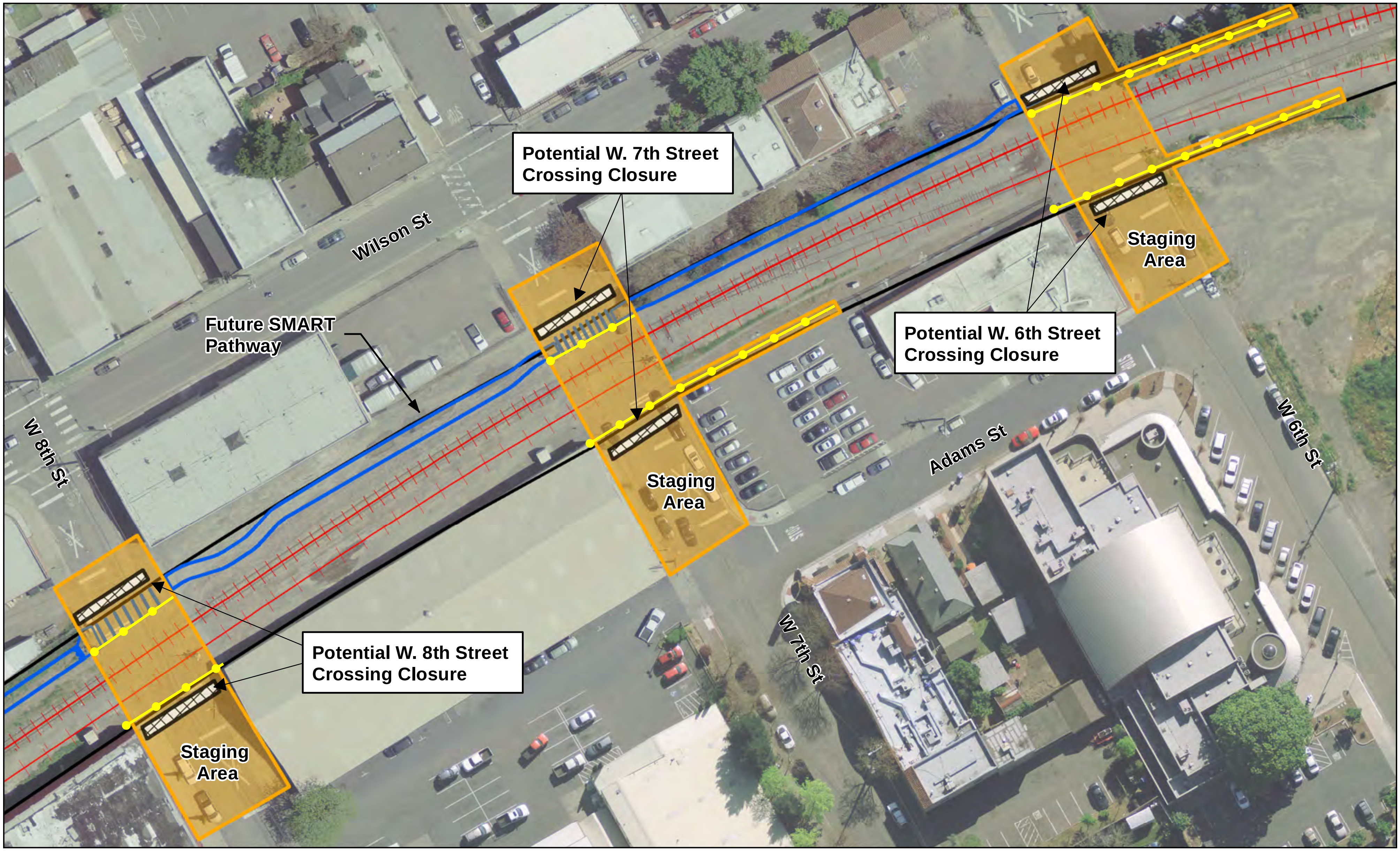

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LEGEND

- Traffic Barricade
- SMART Rail Corridor
- Future SMART Pathway
- Fencing
- Construction Area Boundary
- Siding Track
- Main Track

GHD

City of Santa Rosa

City of Santa Rosa
Jennings Avenue Pedestrian and Bicycle Rail Crossing EIR

Job Number 8410868
Revision 1
Date 10 Oct 2014

Preferred Project - At-grade Rail Crossing
Alternative Locations for Closure of One Crossing

Figure 2-3

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Following construction, exposed and disturbed areas would be restored. A native grass seed mix would be applied to areas disturbed outside the rail corridor.

At W. Sixth, W. Seventh, or W. Eighth Street, the existing asphalt pavement and concrete panels within the rail corridor would be removed, and the track ballast and railroad ties would be restored to conform with surroundings. If suitable, the concrete panels to be removed during the rail crossing closure could be reused at the Jennings Avenue site for the new at-grade rail crossing. After removal of the crossing surfaces, new fencing and traffic barricades would be installed along the edge of the rail corridor, and the roadway would be re-striped.

Construction Duration and Hours

Construction of the Preferred Project is anticipated to occur in the Summer of 2016 or Summer of 2017 and require approximately two months to complete. This would include up to two weeks to complete the closure of an existing at-grade rail crossing at W. Sixth, W. Seventh, or W. Eighth Street, and up to five weeks to complete construction of an at-grade crossing at Jennings Avenue.

Because the rail corridor is anticipated to be active for passenger and freight train service during the construction process, construction work windows and agreements would need to be coordinated with SMART and NCRA to minimize conflicts. Based on preliminary discussions with SMART, work within the SMART right-of-way would need to be performed at night to avoid interference with daytime passenger and freight rail service. Some freight trains run at night; to avoid interference with nighttime freight trains, the City would coordinate with NCRA to avoid construction on those nights when freight trains are scheduled or institute a “stop and proceed order”, where the freight train would stop, ensure the tracks are clear, and then proceed slowly through the construction area.

Based on the type and extent of work to be performed within the SMART right-of-way, closure of an at-grade rail crossing at W. Sixth, W. Seventh, or W. Eighth Street could require up to four nighttime work periods, while construction of an at-grade rail crossing at Jennings Avenue could require up to eight nighttime work periods. Anticipated nighttime work hours are 8:00 p.m. to 6:00 a.m., Monday through Friday. Prior to construction, the City would prepare a construction lighting plan that specifies locations and methods for minimizing light spillover to adjacent residential areas for work at the Jennings Avenue site and the crossing closure at W. Sixth Street, W. Seventh Street, or W. Eighth Street. Anticipated daytime work hours are 7:00 a.m. to 7:00 p.m. Monday through Friday, and 9:00 a.m. to 5:00 p.m. on Saturdays.

Construction Access, Staging, and Equipment

Worker vehicles and haul trucks would access the Jennings Avenue Project area from U.S. Highway 101 and local City streets, including Guerneville Road, N. Dutton Avenue, Range Avenue, and Jennings Avenue. Access to the W. Sixth, W. Seventh, or W. Eighth Street areas would be from U.S. Highway 101, W. Third Street, Wilson Street, and Davis Street, although other surrounding roadways could also potentially be used, including Dutton Avenue, W. Ninth Street, and Donahue Street.

Staging areas for construction equipment, vehicles, and supplies would be established on either side of the rail corridor within the City’s right-of-way (see Figure 2-2 [At-grade Rail Crossing Conceptual Design] and 2-3 [Alternative Locations for Closure of One Rail Crossing]). The staging areas and work sites would be enclosed with a chain link fence during construction to prevent pedestrian access across the rail corridor.

The types of construction equipment that would likely be required include an excavator, backhoe, front end loader, small crane, paver, roller, a variety of trucks including watertrucks and cement mixers. Portable lighting units would be needed during nighttime work. Pile drivers are not proposed for use during construction.

Supply Trucks and Worker Vehicles

The number of construction-related vehicles traveling to and from the Project areas would vary on a daily basis. For the at-grade crossing at Jennings Avenue, it is anticipated that the peak number of supply trucks would occur during the import of construction materials, including aggregate base, concrete, and asphalt materials, and would consist of up to 10 round trips on any one day. In addition to supply trucks, it is anticipated that construction crew trips at Jennings Avenue would require up to 10 round trips per day. Therefore, on any one day during construction of the Jennings Avenue at-grade rail crossing, up to 20 vehicle round trips could occur.

For the closure at W. Sixth, W. Seventh, or W. Eighth Streets, it is anticipated that the peak number of supply trucks would occur during the export of demolition materials, including aggregate base, concrete, and asphalt materials. The number of construction vehicle trips expected on any one day during closure of a rail crossing is anticipated to be up to eight supply trucks and up to eight worker vehicles for a total of up to 16 round trips.

Site Preparation and Demolition

To provide space for construction of an at-grade crossing at Jennings Avenue, site preparation would remove vegetation within the construction zone (see Figure 2-2 [At-grade Rail Crossing Conceptual Design]), including several trees that qualify as a heritage tree under Chapters 17-24 of the Santa Rosa City Code.

Closure of a rail crossing at W. Sixth, W. Seventh, or W. Eighth Streets would not require tree removal.

At Jennings Avenue, the existing guard rail on the west side of the rail corridor would be removed to allow construction access. On the east side of the rail corridor at Jennings Avenue, rip-rap, steel plates, or other type of stabilization measures, may be placed within a portion of Steele Creek in order to support construction equipment access and long-term pathway improvements over the existing box culvert.

Demolition debris and similar materials from both the Jennings Avenue area and the W. Sixth, W. Seventh, or W. Eighth Street areas would be off-hauled for recycling or composting, and materials with no practical potential for reuse would be disposed of at a regional landfill, such as the Redwood Sanitary Landfill in Marin County, the Potrero Hills Landfill in Solano County, and the Keller Canyon Landfill in Contra Costa County. Any excavated soil found to contain unacceptable levels of hazardous contaminants would be hauled to a licensed disposal site.

2.4.3 Operation and Maintenance of Preferred Project

SMART would be responsible for the regular maintenance of crossing warning signal equipment to ensure that the facilities remain operational. Maintenance of the pathway, fencing, signs, striping and other features outside the SMART corridor would be the responsibility of the City. It is estimated that maintenance visits by the City would be conducted approximately twice a year, and that maintenance visits by SMART staff would be conducted approximately once a month.

Once the at-grade crossing is installed, California Public Utilities Code Section 7604 would require that trains sound warning whistles at all pedestrian at-grade crossings. In general, the train

engineer must sound the horn at a distance of at least 1,320 feet (one-quarter mile) from the at-grade crossing and continue sounding the horn until the locomotive has passed through the area. Therefore, operation of a new at-grade crossing at Jennings Avenue would result in the sounding of additional train horns to the north and south of Jennings Avenue. Northbound trains would be required to sound horns beginning approximately a quarter-mile mile south of Jennings Avenue, and southbound trains would sound horns beginning at the North Santa Rosa SMART Station at Guerneville Road.

2.5 Rail Overcrossing Alternative

The Rail Overcrossing Alternative would consist of a grade-separated pedestrian and bicycle rail crossing at Jennings Avenue. Because the rail overcrossing would be grade-separated, this alternative would not require closure of an existing at-grade rail crossing elsewhere in the City.

2.5.1 Characteristics of the Rail Overcrossing Alternative

The Rail Overcrossing Alternative at Jennings Avenue would include installation of grade-separated ramps, stairs, and an elevated crossing over the SMART rail corridor. The conceptual layout of the rail overcrossing is shown on Figure 2-4 (Rail Overcrossing Alternative: Conceptual Design). A site improvement plan for the rail overcrossing is shown on Figure 2-5 (Rail Overcrossing Alternative Improvements Plan). A visual simulation of the rail overcrossing from the west side of the rail crossing is shown in Section 3.1 Aesthetics, Figure 3.1-6 (Rail Overcrossing Alternative – Visual Simulation).

The rail overcrossing would be designed in compliance with federal and State regulations, including the ADA and CPUC General Order No. 26-D regulations governing clearance requirements for railroads. A minimum overhead clearance of 23 feet would be provided for the rail overcrossing, and the minimum side clearance from the centerline of the railroad corridor would be 10 feet. Applicable portons of the rail overcrossing would also be designed in accordance with the California Building Code (CCR, Title 24, Part 2).

Based on the soil types identified at the site and the findings of the preliminary geotechnical report (RGH 2014), the preliminary design of the rail overcrossing utilizes drilled pier foundations. As currently designed, the rail overcrossing would include 17 concrete columns, each supported by a foundation with four 36-inch diameter drilled piers installed to a depth of 68 feet below the ground surface.

To achieve ADA compliance, the preliminary design of the Rail Overcrossing Alternative utilizes eight percent slopes for the pedestrian and bicycle ramps with level landings spaced at 35-foot intervals. To obtain the necessary railroad clearance height using eight percent slopes, the overcrossing ramps would need to be approximately 450 feet long on both the west and east side of the rail corridor. On the west side of the rail corridor, the ramp would begin in a westward direction along the south side of Jennings Avenue extending toward N. Dutton Avenue and would then switch back in an eastward direction towards the rail corridor. On the east side of the rail corridor, the ramp would proceed in a southerly direction within the SMART right-of-way for approximately 225 feet and would then switch back in a northerly direction towards Jennings Avenue. Stairs would be provided on either side of the rail crossing to provide an alternate means of accessing the crossing structure. The preliminary design of the Rail Overcrossing Alternative integrates the overcrossing with the future SMART Pathway, which would be located under a portion of the overcrossing on the east side of the rail corridor.

The overcrossing ramps would be 10-feet wide (interior dimension), with 1-foot wide, 42-inch tall barriers on each side. Recessed LED pathway lighting would be incorporated into the standard barriers approximately every 16 feet, and would meet the current requirements of Title 24 of the CCR for outdoor, non-residential lighting use and design. Hand rails and chain link railings would also be provided on each side the the ramps for safety. Security lighting would be provided along the overcrossing.

To accommodate the space needed for the rail overcrossing, Jennings Avenue on the west side of the rail corridor would be narrowed from its existing width of 39 feet to approximately 24 feet, resulting in two 10-foot vehicle lanes with adjacent 2-foot gutters. Due to the narrowed configuration of the street section, curbside parking along Jennings Avenue between the rail corridor and N. Dutton Avenue would be removed. A driveway extension would be provided under the overcrossing for access to the offices located on the south side of Jennings Avenue. A new asphalt overlay would also be installed along the section of Jennings Avenue between the rail corridor and N. Dutton Avenue.

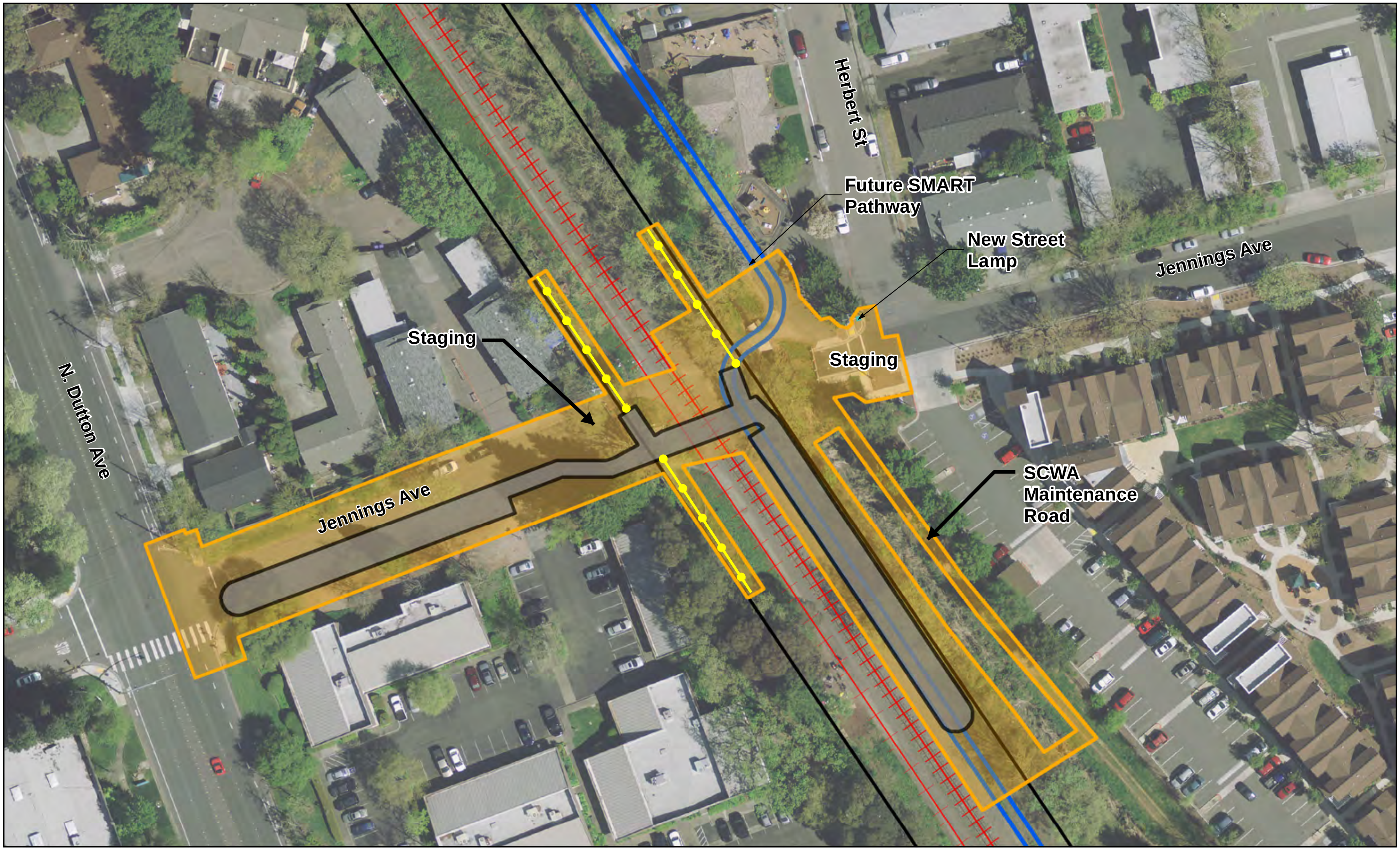
Several existing utilities within Jennings Avenue and the rail corridor would need to be relocated to accommodate construction of the rail overcrossing. A 12-inch water main currently located within Jennings Avenue on the west side of the rail corridor would be abandoned, and a replacement water main would be constructed approximately 7 feet to the north within Jennings Avenue. Two replacement water service connections would be installed to the relocated water main. An existing fire hydrant on the south side of Jennings Avenue on the west side of the rail corridor would be relocated to the new street edge on the south side of Jennings Avenue. A below-ground telephone fiberoptic cable within the SMART right-of-way, and a PG&E gas main across the SMART right-of-way would also need to be relocated. Additionally, a utility pole for overhead electrical and telephone service located on the west side of the rail corridor may need to be relocated to accommodate space for the rail overcrossing stairs.

Storm drain improvements along Jennings Avenue on the west side of the rail corridor would include a new storm drain manhole and catch basin near N. Dutton Avenue. New sidewalk and curb and gutter would be installed along the south side of Jennings and a portion of N. Dutton Avenue. Sidewalk would also be installed on a portion of the north side of Jennings connecting to N. Dutton Avenue. All new utilities would be required to be installed in accordance with City standards. The existing pedestrian push button post on the east side of the N. Dutton Avenue adjacent to the crosswalk would also be relocated.

2.5.2 Construction of Rail Overcrossing Alternative

Construction of the Rail Overcrossing Alternative would involve site preparation, tree removal, grading, excavating, auguring, trenching, paving, and overcrossing construction. The construction area for the Rail Overcrossing Alternative would be approximately 1.25 acres in size (see Figure 2-4 [Rail Overcrossing Alternative Conceptual Design]).

Construction of the rail overcrossing would include excavating and drilling of foundations, and placement of columns, stairs, bridge decks, and other crossing features. The foundation holes for the concrete columns would be drilled using an auger, the hole would be kept open using either a steel casing or drilling muds, and then the hole would be filled with concrete poured in place. If a casing is used to keep the hole open then standard lengths of multiple steel casings would be dropped into the hole prior to the concrete pour. If instead, drilling muds are used to keep the hole open, then a separate closed tank for the bentonite clay drilling mud would be set up adjacent to the auger and hoses would convey the mud from the tank to the auguring process and back.



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LEGEND

- Fencing
- Over-Crossing Boundary
- Signal Arm
- Construction Area Boundary
- New Street Lamp
- Future SMART Pathway
- SMART Rail Corridor
- Main Track
- Siding Track

GHD

City of Santa Rosa

City of Santa Rosa
Jennings Avenue Pedestrian and Bicycle
Rail Crossing EIR

Job Number 8410868
Revision 0
Date 13 Aug 2014

Rail Overcrossing Alternative
Conceptual Design

Figure 2-4

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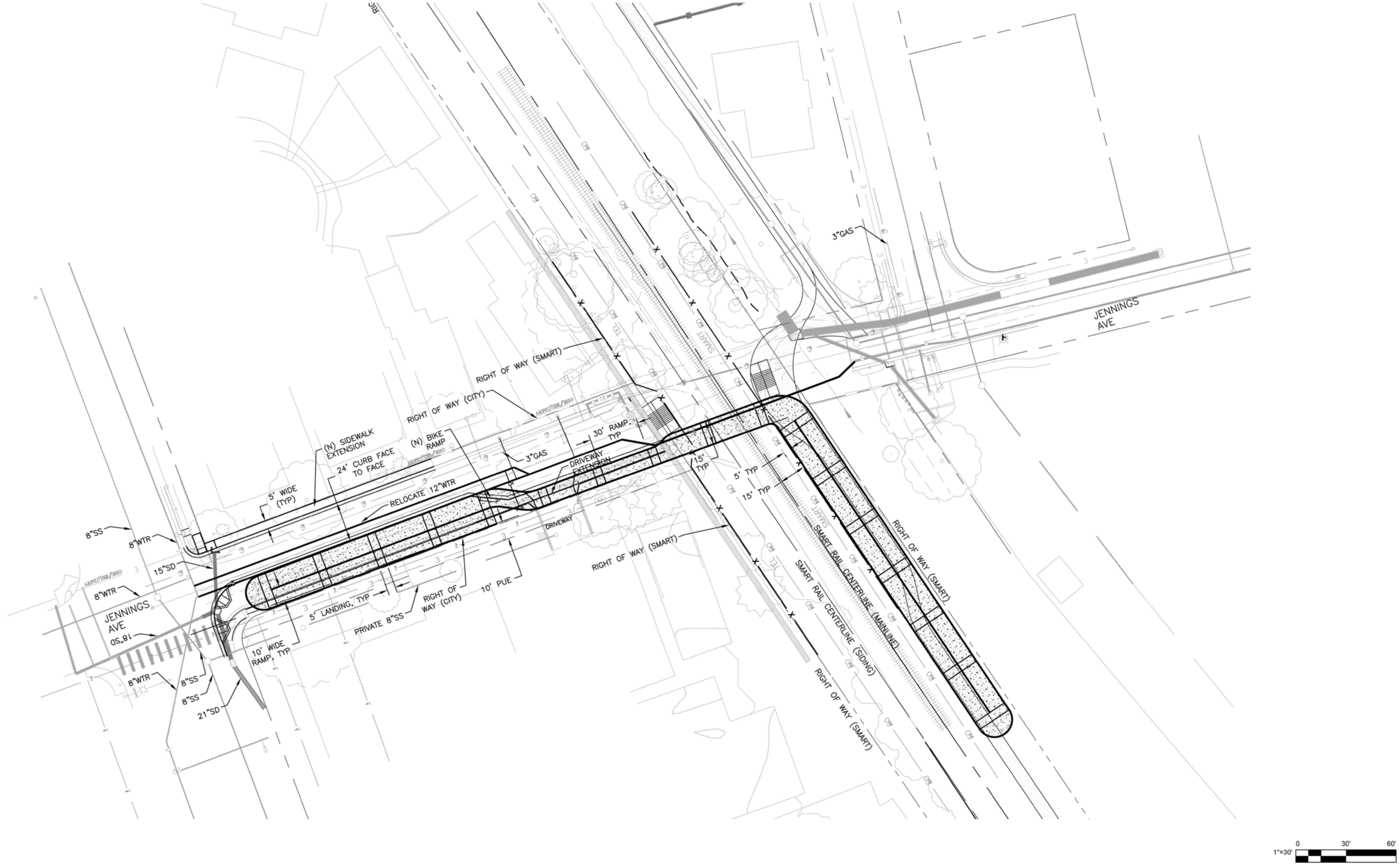

City of Santa Rosa

Jennings Avenue Pedestrian and Bicycle Rail Crossing EIR

Job Number	8410868
Revision	A
Date	Aug 2014

Rail Overcrossing Alternative Improvements Plan

Figure 2-5

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During the foundation drilling, groundwater would be encountered and would need to be managed and disposed of. Based on the depth and diameter of the drilled piers, it is anticipated that up to 4,000 gallons of groundwater may be generated when backfilling with concrete. Anticipating that four drilled piers would be required for each of the 17 columns, this would equate to approximately 16,000 gallons of groundwater and muds for each column, and up to 272,000 gallons for completion of all 17 columns. The groundwater to be pumped during drilling would be stored in tanks. Following appropriate treatment, groundwater generated during foundation drilling would be discharged to the sewer system or possibly to storm drain system, which drains to Steele Creek.

Construction of the rail overcrossing would utilize both cast-in-place and precast construction materials and methods. Several elements of the rail overcrossing would be constructed using cast-in-place construction methods. This would include filling of the drilled piers, mat foundations, concrete columns, portions of the stairs, and the sidewalks, curbs, and gutters. The concrete for cast-in-place construction would be transported to the site via mixer trucks. Based on the volume of construction, it is anticipated that 60 round trip concrete mixer truck trips would be required during construction.

Construction of the overcrossing deck is anticipated to utilize precast elements, approximately 30 to 35 feet in length. The precast slabs would be delivered to the site via trucks or rail and would be installed with cranes.

Vandal-resistant wrought-iron fencing would be installed adjacent to the rail overcrossing to direct pedestrian and bicycle users to the rail crossing. The fencing is anticipated to be installed along the same general alignment as the SMART fencing that would likely be in place prior to construction. Installation of the fencing is not anticipated to require tree removal.

Relocation of water, gas, electric, and communications facilities within the construction area would be coordinated with utility owners. Utility relocations would be installed using open trench construction methods, which would include removal of surface material; excavation and shoring of a trench; installation of pipe bedding, pipelines and conduits; backfilling of the trench; and resurfacing. Open-trenching for utility relocations would generally be excavated to a depth of up to 4- to 6-feet. Shallow trenching, approximately 30-inches deep, would also be required for an electrical conduit to be extended for a new street lamp to be installed on the east side of the rail corridor at the northwest corner of Jennings Avenue and Herbert Avenue. Following completion of the overcrossing, Jennings Avenue on the west side of the rail corridor would be re-paved.

Following construction, exposed and disturbed areas would be restored. A native grass seed mix would be applied to areas disturbed outside the rail corridor.

Construction Duration and Hours

Construction of the Rail Overcrossing Alternative is anticipated to begin in the Summer of 2016 or Summer of 2017 and require approximately six months to complete. Because the rail corridor is anticipated to be active for passenger and freight train service during the construction process, construction work windows and agreements would need to be coordinated with SMART and NCRA to minimize conflicts. Based on preliminary discussions with SMART, work within the SMART right-of-way would need to be performed at night to avoid interference with daytime passenger and freight rail service. Some freight trains run at night; to avoid interference with nighttime freight trains, the City would coordinate with NCRA to avoid construction on those nights when freight trains are scheduled or institute a “stop and proceed order”, where the freight train would stop, ensure the tracks are clear, and then proceed slowly through the construction area. Based on the type and extent of work to be performed within the SMART right-of-way, construction of the Rail

Overcrossing could require up to 53 nighttime work periods. Prior to construction, the City would prepare a construction lighting plan that specifies locations and methods for minimizing light spillover to adjacent residential areas for work at the Jennings Avenue area. Anticipated nighttime work hours are 8:00 p.m. to 6:00 a.m. Anticipated daytime work hours are 7:00 a.m. to 7:00 p.m. Monday through Friday, and 9:00 a.m. to 5:00 p.m. on Saturdays.

Construction Access, Staging, and Equipment

Worker vehicles and supply trucks would access the rail overcrossing site from U.S. Highway 101 and local City streets, including Guerneville Road, N. Dutton Avenue, Range Avenue, and Jennings Avenue.

Staging areas for construction equipment, vehicles, and supplies would be established on either side of the rail corridor (see Figure 2-4 [Rail Overcrossing Alternative Conceptual Design]). The staging areas and work sites would be enclosed with a chain link fence during construction to prevent pedestrian access across the rail corridor.

To accommodate construction of the overcrossing, the construction area would include a portion of the SCWA access road on the east side of Steele Creek, as well as one area where steel plates would be laid from one side of Steele Creek to the other to allow vehicle access (see Figure 2-4 [Rail Overcrossing Alternative Conceptual Design]). Construction of the concrete columns and placement of the overcrossing deck would occur by using concrete pumper trucks and cranes located on the SCWA access road outside the creek channel. The cranes and pumper trucks would access the ramp site along the rail corridor by reaching over the creek and intervening trees.

The types of construction equipment that would likely be required include an excavator, backhoe, front end loader, crawler tractor, grader, street sweeper, hoe ram, paving grinder, water truck, excavator mounted augur, crane, forklift, paver, roller, cement mixer, and, for nighttime work, portable lighting units. Pile drivers are not proposed for use during construction of the Rail Overcrossing Alternative.

Supply Trucks and Worker Vehicles

The number of construction-related vehicles traveling to and from the Jennings Avenue site would vary on a daily basis. It is anticipated that the peak number of supply trucks would occur during the import of construction materials, primarily concrete, rebar, and pre-cast deck slabs, and would consist of up to 24 round trips on any one day. In addition to supply trucks, it is anticipated that construction crew trips would require up to 16 round trips per day. Therefore, on any one day during construction of the Jennings Avenue overcrossing, up to 40 vehicle round trips could occur.

Site Preparation and Demolition

To provide space for construction of the overcrossing at Jennings Avenue, site preparation would remove vegetation within the construction zone (see Figure 2-4 [Rail Overcrossing Alternative Conceptual Design]), including a number of trees that qualify as a heritage tree under Chapters 17-24 of the Santa Rosa City Code. Trees would also require trimming during construction and to make space for the structure. The existing guard rail on the west side of the rail corridor would be removed to allow construction access. On the east side of the rail corridor, rip-rap, steel plates, or other type of stabilization measures, may be placed within a portion of Steele Creek in order to support construction equipment access and long-term pathway improvements over the existing storm drain box culvert.

Demolition debris and similar materials would be off-hauled for recycling or composting, and materials with no practical potential for reuse would be disposed of at a regional landfill, such as

the Redwood Sanitary Landfill in Marin County, the Potrero Hills Landfill in Solano County, and the Keller Canyon Landfill in Contra Costa County. Any excavated soil found to contain unacceptable levels of hazardous contaminants would be hauled to a licensed disposal site.

Partial Roadway Closure at Jennings Avenue

During construction of the Rail Overcrossing Alternative, a partial lane closure along Jennings Avenue would be required between the rail corridor and N. Dutton Avenue. The partial lane closure would be managed such that one travel lane would be kept open at all times to allow alternating traffic flow in both directions. Contractors would be required to use steel plates or backfilling of trenches to restore vehicle access at the end of each workday. An existing driveway entrance to an office complex along the south side of Jennings Avenue west of the rail corridor may also need to be temporarily closed during construction. An existing alternate driveway located along N. Dutton Avenue would remain open for vehicles that would access the office complex.

2.5.3 Operation and Maintenance of the Rail Overcrossing Alternative

Maintenance of the rail overcrossing would be the responsibility of the City. It is estimated that maintenance visits by the City would be conducted approximately once a month.

2.6 Project Measures

The following measures and practices are included as part of the Project to reduce or avoid adverse effects that could result from construction or operation.

2.6.1 Project Measure 1 – Implement Air Quality Control Measures during Construction

To limit dust, criteria pollutants, and precursor emissions associated with the construction activity, the City will include the following Bay Area Air Quality Management District recommended Basic Construction Measures in all construction contract specifications for the proposed Project:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas and unpaved access roads) shall be watered two times per day;
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered;
- All visible mud or dirt tracked-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping shall be prohibited;
- All vehicle speeds on unpaved areas shall be limited to 15 miles per hour;
- All paving shall be completed as soon as possible after work is finished;
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of CCR). Clear signage shall be provided for construction workers at all access points;
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation; and
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action

within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

2.6.2 Project Measure 2 – Implement Greenhouse Gas (GHG) Control Measures during Construction

The City and its contractors will implement actions 9.2.1 through 9.2.3 of the City's Climate Action Plan during construction, as follows:

- Action 9.2.1 - Minimize idling times either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes or less (as required by the California airborne toxics control measure Title 13, Section 2485 of CCR). Provide clear signage at all access points to remind employees of idling restrictions.
- Action 9.2.2 - Construction equipment shall be maintained in accordance with manufacturer's specifications.
- Action 9.2.3 - Limit GHG emissions from construction equipment by selecting one of the following measures, as feasible and appropriate to the construction project:
  - Substitute electrified equipment for diesel- and gasoline-powered equipment where practical.
  - Use alternative fuels for construction equipment on-site, where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel.
  - Avoid the use of on-site generators by connecting to grid electricity or utilizing solar-powered equipment.

Project Measure 3 – Implement Storm Water Control Measures during Construction

The City will require Project contractors to implement storm water best management practices (BMPs) required by the City's storm water permit and other applicable regulation. These include BMPs specific to sites less than and greater than one acre, respectively.

BMPs for Construction Sites Less than 1 Acre include, but are not limited to:

<u>Erosion Control</u>

- Schedule the Project to sequence construction activities with the installation of erosion and sediment control measures and preserving existing vegetation (California Stormwater Quality Association [CASQA] Handbook BMP EC-1 and EC-2 or Caltrans Handbook BMP SS-1 and SS-2).

<u>Sediment Controls</u>

- Install a combination of silt fencing, sand bag barriers, and stabilized construction site entrance/exit to detain sediment-laden runoff and to minimize tracking of sediment onto public roads (CASQA Handbook BMP SE-1, SE-8, TR-1 or Caltrans Handbook BMP SC-1, SC-8, TC-1).

<u>Non-Storm Water Management</u>

- Implement water conservation and dewatering practices to prevent the potential for erosion and the transport of pollutants off site (CASQA or Caltrans Handbook BMP NS-1 and NS-2).

<u>Waste Management</u>

- Implement general site and materials management BMPs, including material delivery and storage, stockpile management, spill prevention and control, solid waste management, concrete waste management, and sanitary/septic waste management (CASQA and Caltrans Handbook WM-1, WM-3, WM-4, WM-5, WM-8, and WM-9).

BMPs for Construction Sites Greater than 1 Acre include, but are not limited to:

<u>Erosion Control</u>

- Schedule the Project to sequence construction activities with the installation of erosion and sediment control measures and preverving existing vegetation. Utilize a combination of BMPs to minimize soil erosion, including hydraulic mulch, hydroseeding, soil binders, straw mulch, geotextiles and mats, and wood mulching (CASQA Handbook BMP EC-1 to EC-8 or Caltrans Handbook BMP SS-1 to SS-8).

<u>Sediment Controls</u>

- Install a combination of BMPs to to detain sediment-laden runoff, including fiber rolls, gravel bag berms, street sweeping and/or vacuuming, storm drain inlet protection, sediment basins; check dams, silt fencing, and sand bag barriers (CASQA Handbook BMP SE-1, SE-2, SE-4, SE-5, SE-6, SE-7, SE-8, SE-10) or Caltrans Handbook BMP SC-1, SC-2, SC-4, SC-5, SC-6, SC-7, SC-8, SC-10).

<u>Tracking Control BMPs</u>

- Install a stabilized construction entrance/exit and etrance/exit tire wash at the site to minimize the tracking of sediment onto public roads (CASQA Handbook BMP TR-1 and TC-3) or Caltrans Handbook BMP TC-1 and TC-3).

<u>Additional Controls</u>

- Implement wind erosion controls and stabilized construction roadways as needed (CASQA Handbook BMP WE-1 and TC-2 or Caltrans Handbook BMP WE-1 and TC-2).

<u>Non-Storm Water Management</u>

- Implement a combination of BMBs to prevent the potential for non-storm water discharges, including water conservation practices, dewatering operations, and vehicle and equipment washing/fueling/maintenance (CASQA or Caltrans Handbook BMP NS-1, NS-2, NS-8, NS-9, NS-10).

<u>Waste Management</u>

- Implement general site and materials management BMPs, including material delivery and storage, stockpile management, spill prevention and control, solid waste management, concrete waste management, and sanitary/septic waste management (CASQA and Caltrans Handbook WM-1, WM-3, WM-4, WM-5, WM-8, and WM-9).

2.7 Required Permits and Approvals

2.7.1 Required City Permits and Approvals

The entitlements for both the Preferred Project and the Rail Overcrossing Alternative are summarized below:

Preferred Project

- Tree removal and trimming would require compliance with Santa Rosa's Tree Ordinance, City Code Chapter 17-24, Ordinance 2858, which requires planting of replacement trees.
- Closure of a roadway at W. Sixth, W. Seventh, or W. Eighth Street would require approval by the City Council as required in City Code Chapter 11, Vehicles and Traffic.
- W. Sixth Street in the vicinity of the SMART rail corridor is identified as a planned Class II bicycle lane in the General Plan 2035 and the Downtown Station Area Specific Plan, and as a Bicycle Boulevard in the Bicycle and Pedestrian Master Plan. Therefore, if closure of the at-grade rail crossing at W. Sixth Street were selected as part of the Preferred Project, then the General Plan, the Downtown Station Area Specific Plan, and the Bicycle and Pedestrian Master Plan would need to be amended to reflect re-routing of this proposed bicycle route.
- An Encroachment Permit would be required for work within the public right-of-way.
- A One-time Wastewater Discharge Permit for discharge of groundwater from excavation dewatering to the sewer system.

Rail Overcrossing Alternative

- Building and grading permits would be required for the overcrossing.
- Tree removal and trimming would be required to comply with Santa Rosa's Tree Ordinance, City Code Chapters 17-24, Ordinance 2858, which requires planting of replacement trees.
- An Encroachment Permit would be required for work within the public right-of-way.
- A One-time Wastewater Discharge Permit for discharge of groundwater from excavation dewatering to the sewer system.

2.7.2 Required Agency Permits and Approvals

Potentially applicable permits, consultations, and approvals from federal, state and local agencies are listed below. These agencies may issue approvals for the Project, and thus need to rely upon the EIR. This EIR is intended to apply to all the Project approvals listed below, as well as to any other permits or approvals necessary or desirable to implement the Project.

- CPUC: Formal Application to Construct a New Public Rail Crossing and CPUC Standard Form G, Report of Completed Changes at Rail Crossings. Review of application for a Quiet Zone and, if additional safety equipment were recommended, General Order 88-B, Modify an Existing Rail Crossing.
- SMART: Right-of-Entry Permit, Temporary Construction Easement, Permanent Maintenance Agreement and Easement
- NCRA: Construction Agreement
- California Department of Fish & Wildlife: Streambed Alteration Agreement

- North Coast Regional Water Quality Control Board: 401 Water Quality Certification under the Clean Water Act and Low Threat Discharge Permit
- Sonoma County Water Agency: Revocable License Agreement, Temporary Construction Easement, Permanent Easement, Permission to Excavate Near High Pressure Aqueduct.
- State Water Resources Control Board: General Construction Permit, as required for projects that disturb one or more acres of soil.
- U.S. Army Corps of Engineers: Section 404 Permit under the Clean Water Act
- Federal Railroad Administration: Review of application for Quiet Zone.

2.8 References

California Public Utilities Commission (CPUC). 2012. Letter from Michelle Cooke, Interim Director Consumer Protection and Safety Division, to Mayor Ernesto Olivares, Mayor. January 13.

California Stormwater Quality Association (CASQA). 2003. *California BMP Handbook, Construction*. January.

California Department of Transportation (Caltrans). 2003. *Stormwater Quality Handbooks, Construction Site BMPs*. March.

Santa Rosa, City of (Santa Rosa). 2007. *Downtown Station Area Specific Plan*.

Santa Rosa. 2009. *Santa Rosa General Plan 2035*. November 3.

Santa Rosa. 2010. *Bicycle and Pedestrian Master Plan 2010*.

Santa Rosa. 2012. *North Santa Rosa Station Area Specific Plan*.

Santa Rosa. 2013. *Santa Rosa Citywide Creek Master Plan*. August.

Santa Rosa. 2014. Personal communication from Santa Rosa Supervising Engineer Rob Sprinkle.

Sonoma-Marin Area Rail Transit (SMART). 2013. Personal communication from Senior Rail Engineer Bill Gamlen. September.

3. Environmental Setting, Impacts, and Mitigation Measures

Scope of Analysis

This Draft EIR analyzes the potential effects of the proposed Project on the environment under the applicable environmental resource topics listed in the CEQA Guidelines Appendix G Initial Study Checklist.

Each environmental resource area potentially impacted by the Project is addressed in its own section, numbered as follows:

- 3.1 Aesthetics
- 3.2 Air Quality
- 3.3 Biological Resources
- 3.4 Cultural Resources
- 3.5 Geology and Soils
- 3.6 Greenhouse Gas Emissions
- 3.7 Hazards and Hazardous Materials
- 3.8 Hydrology and Water Quality
- 3.9 Land Use and Planning
- 3.10 Noise
- 3.11 Public Services and Recreation
- 3.12 Transportation
- 3.13 Utilities and Service Systems

Each section of Chapter 3 contains the following elements:

Setting. This subsection presents a description of the existing physical environmental conditions in the Plan area with respect to each resource area at an appropriate level of detail to understand the impact analysis. It describes existing conditions and provides a baseline by which to compare the potential impacts of the proposed Plan.

Regulatory Framework. This subsection provides a brief discussion of federal, State, and local regulations and policies that are relevant to the resource.

Significance Thresholds. This subsection provides the significance thresholds for evaluation of environmental impacts.

Methodology. The methodology subsection discusses the approach to the analysis.

Impacts and Mitigation Measures. This subsection evaluates the potential for the Plan to significantly affect the physical environment described in the setting. Potential impacts are identified and characterized, and where feasible, mitigation measures are identified to avoid or reduce significant impacts to a less-than-significant level.

Cumulative Impacts and Mitigation Measures. Cumulative impacts are discussed in each environmental resource section following the description of the Plan-level impacts and mitigation measures. The cumulative impact analysis is based on the same setting, regulatory framework, and significance thresholds presented in each resource topic section. Additional mitigation

measures are identified if the analysis determines that the Plan's contribution to an adverse cumulative impact would be cumulatively considerable and, therefore, significant.

Significance Determinations

The significance thresholds for each environmental resource topic are presented in each section of Chapter 3. For the impact analyses, the following categories are used to identify impact significance:

No Impact. This determination is made if a resource is absent or if a resource exists within the Plan area, but there is no potential that the Plan could affect the resource.

Less-than-Significant Impact. This determination applies if there is a potential for some limited impact on a resource, but the impact is not significant under the significance threshold.

Less-than-Significant Impact after Mitigation Incorporated. This determination applies if there is the potential for a substantial adverse impact in accordance with the significance threshold, but mitigation is available to reduce the impact to a less-than-significant level.

Significant and Unavoidable Impact after Mitigation Incorporated. This determination applies to impacts that are significant, and mitigation has been incorporated, but the mitigation does not reduce the impact to less than significant and there appears to be no additional feasible mitigation available to reduce the impact to a less-than-significant level.

Significant and Unavoidable Impact. This determination applies to impacts that are significant, and there appears to be no feasible mitigation available to reduce the impact to a less-than-significant level.

Cumulative Impacts

Cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

The cumulative impact analysis for each environmental resource topic is described in the appropriate subsections of this Chapter, following the description of project impacts and mitigation measures.

Approach to Cumulative Impact Analysis

Two approaches to cumulative impact analysis are discussed in CEQA Guidelines Section 15130(b). The first approach utilizes a list of past, present, and probable future projects producing related or cumulative impacts. The second approach utilizes a summary of projections contained in an adopted local, regional or statewide plan, such as a general plan or related planning document, or in an adopted or certified environmental document, which describes or evaluates conditions contributing to cumulative effects.

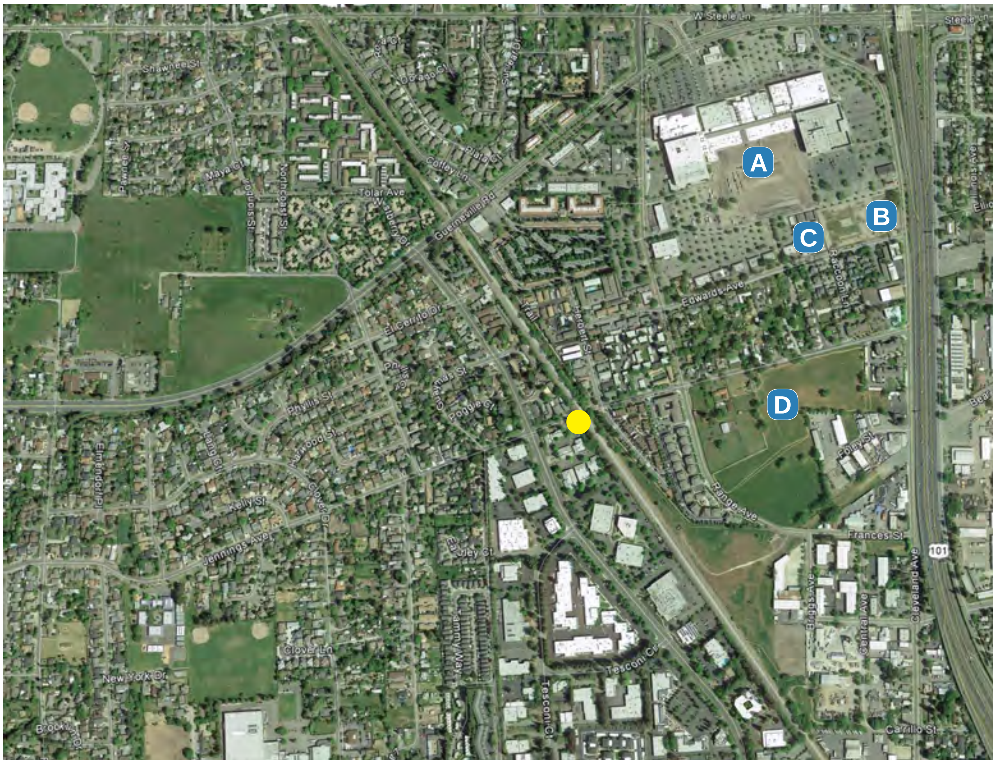
For this EIR, the cumulative impacts analysis uses the list approach, because small infrastructure projects such as the Jennings Avenue Pedestrian and Bicycle Rail Crossing Project are not evaluated in substantial detail in general plan or specific plan EIRs.

List of Relevant Projects

Table 3-1 Projects Considered for Cumulative Impacts provides a list of the past, present, and reasonably foreseeable projects within and near the Project area, including a brief description of the projects and their anticipated construction schedules. Figure 3-1 Location of Projects Considered in the Cumulative Analysis shows the location of the cumulative projects.

Table 3-1 Projects Considered for Cumulative Impacts

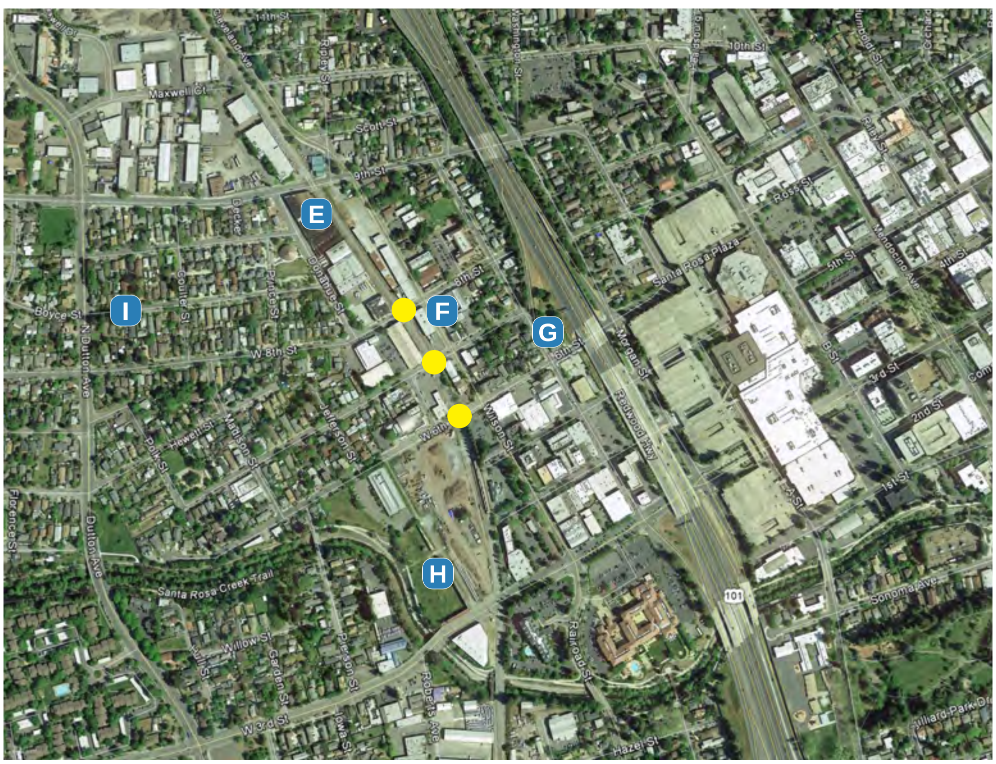
Project Name	Project Description	Estimated Construction Schedule	Project Location
Cumulative Projects near Jennings Avenue			
Coddingtown Target	Commercial	2014	900 Coddingtown Center
Dicks Sporting Goods	Commercial	2014	1975 Cleveland Avenue
Edwards Office Building	Commercial	Unknown	1300 Coddingtown Center
Range Ranch	Residential	2014	1020 Jennings Avenue
Cumulative Projects near W. Sixth, W. Seventh, and W. Eighth Streets			
DeTurk Winery Village	Mixed Use, historic	Unknown	8 W. Ninth Street
West End Village	Residential, historic	Unknown	701 Wilson Street
Sixth and Davis	Mixed Use	Unknown	510 Davis Street
Santa Rosa Canners	Residential, historic	Unknown	3 W. Third Street
315 Boyce Street Project	Residential, historic	2014	315 Boyce Street
Cumulative Projects near both Project Areas			
SMART passenger service	12 round trips per weekend and up to 3 round trips per weekend day	2014 - 2016	SMART rail corridor through Santa Rosa
SMART Class I Pathway	Bicycle and pedestrian path	Unknown	Parallel to the rail corridor east of Jennings Avenue, W. Sixth, W. Seventh, and W. Eighth Streets
Increased NCRA freight train service	3 round trips per week	No construction needed	SMART rail corridor through Santa Rosa



LEGEND

- Jennings Avenue Project Location
- A Coddingtown Target
- B Dicks Sporting Goods
- C Ed   ards Office Building
- D Range Ranch

Cumulative Projects Near Jennings Avenue



LEGEND

- Potential Crossing Closure Locations
- E DeTurk Winery Village
- F West End Village
- G Sixth and Davis
- H Santa Rosa Canners
- I 315 Boyce Street Project

Cumulative Projects Near W. Sixth, W. Seventh, and W. Eighth Streets

N

GHD

City of Santa Rosa

City of Santa Rosa
Jennings Avenue Pedestrian and
Bicycle Rail Crossing EIR

Job Number	8410868
Revision	A
Date	Sep 2014

Cumulative Projects Map

Figure 3-1

\\ghdnet\ghd\US\Santa Rosa\Projects\02057 - City of Santa Rosa\02057-8410868 Jennings Ave Crossing EIR\04-Technical Work\30 Admin Draft EIR\Figures/Cumulative Projects Map.indd

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3.1 Aesthetics

This section addresses issues regarding aesthetic and visual quality impacts. To provide the basis for this evaluation, the section describes the existing visual resources in the Project area and the applicable regulatory framework. The evaluation section establishes the thresholds of significance, evaluates potential aesthetics impacts, and identifies appropriate mitigation, as necessary.

3.1.1 Impacts Evaluated in Other Sections

The following subjects are related to aesthetics and visual resources, but are evaluated in other sections of this document:

- Historical resources are evaluated in Section 3.4, Cultural Resources.

3.1.2 Setting

Concepts and Terminology

Visual or aesthetic resources are generally defined as both the natural and built features of the landscape that contribute to the public's experience and appreciation of the environment. Depending on the extent to which a project's presence would alter the visual character and quality of the environment, a visual or aesthetic impact may occur. Familiarity with the following terms and concepts will aid the reader in understanding the content of this chapter.

- **Visual Character** - Visual character is a general description of the visual attributes of a particular land use setting and the unique set of landscape features. The purpose of defining the visual character of an area is to provide the context within which the visual quality of a particular site or locale is most likely to be perceived by the viewing public. For urban areas, visual character is typically described on the neighborhood level or in terms of areas with common land use; intensity of development; socioeconomic conditions; and/or landscaping and urban design features.

- **Visual Quality** - Visual quality is defined as the overall visual impression or attractiveness of a site or locale as determined by its aesthetic qualities (such as color, variety, vividness, coherence, uniqueness, harmony, and pattern). Natural and built features combine to form perspectives with varying degrees of visual quality, which is rated in this analysis as low, moderate, and high.

  - Low. The location is lacking in natural or cultural visual resource amenities typical of the region. A site with low visual quality will have aesthetic elements that are relatively unappealing and perceptibly uncharacteristic of the surrounding area.
  - Moderate. The location is typical or characteristic of the region's natural or cultural visual amenities. A site with moderate visual quality maintains the visual character of the surrounding area, with aesthetic elements that do not stand out as either contributing to or detracting from the visual character of an area.
  - High. The location has visual resources that are unique or exemplary of the region's natural or cultural scenic amenities. A site with high visual quality is likely to stand out as particularly appealing and makes a notable positive contribution to the visual character of an area.

- **Affected Viewers** - Affected viewers and exposure conditions address the variables that affect viewers and their visual exposure to the rail crossing and the crossing closure. The identification of viewer types and volumes describes the type and quantity of potentially

affected viewers within the area. Land uses that derive value from the quality of their settings are considered potentially sensitive to changes in visual conditions. Sensitive viewers are those who have a strong stake or interest in the quality of the landscape and have a greater level of concern towards changes that degrade or detract from the visual character of an area. Examples of viewers with elevated concern for visual quality include recreationists, pedestrians, and tourists.

- **Viewer Exposure** - Viewer exposure considers some or all of the following factors: landscape visibility (the ability to see the landscape); viewing distance (the proximity of viewers to the rail crossings or crossing closures); viewing angle (how the rail crossing or crossing closure would be viewed); extent of visibility (whether the line of sight is open and panoramic to the rail crossing or crossing closure or restricted by terrain, vegetation, and/or structures); and duration of view.
- **Viewer Sensitivity** - Visual sensitivity is the overall measure of a site's susceptibility to adverse visual changes. Visual sensitivity is rated as high, moderate, or low and is determined based on the combined factors of visual quality, viewer types and volumes, and visual exposure to the rail crossings and crossing closure. A setting's overall visual sensitivity is the measure of its susceptibility to significant visual impacts as a result of project-caused visual change.

Visual Character of the Project Areas

The Jennings Avenue Project area consists of the SMART rail corridor at Jennings Avenue. The rail corridor at Jennings Avenue is approximately 80 feet wide and includes two parallel railroad tracks supported on a raised ballast made of crushed stone. The existing rail corridor passes through urban development on both sides of the rail corridor. A mixture of valley oak, live oak, coast redwood, and non-native trees are located within the Jennings Avenue Project area on either side of the rail corridor. A creek (Steele Creek) with riparian vegetation is located on the east side of the rail corridor between the tracks and Jennings Avenue. The Sonoma County Water Agency owns and maintains the waterway, including an existing service road parallel to the creek, extending from Jennings Avenue to Guerneville Road. The terrain is relatively flat. Vegetation is generally native mature trees along Steele Creek.

Jennings Avenue is not a through street in the area; existing guard rails block the end of Jennings Avenue on either side of the rail corridor to prevent vehicular access. No pedestrian gates or other crossing-related improvements exist at the site.

On the west side of the rail corridor, a sidewalk is present on a portion of the north side of Jennings Avenue, while on the east side of the rail corridor, sidewalks are present on both sides of the street. Surrounding land uses include one- and two-story residential housing and a business park (The Oaks) to the west of the rail corridor, and one- to three-story residential housing, including the Arroryo Point Apartment complex, to the east. Little People's Playhouse, a childcare center and preschool, is located immediately adjacent to the northeast. The neighborhood to the east is a mixture of new and older development with mature street trees. The neighborhood to the west is older with mature street trees. Distant views in all directions are limited by development and trees. Figure 3.1-1 (Jennings Avenue Project Area Views 1-2) show the area immediately east of the rail corridor at Jennings Avenue and the surrounding neighborhood along Herbert Street. Figure 3.1-2 (Jennings Avenue Project Area Views 3-4) show the multi-family residential area immediately east of the crossing and the view of the rail corridor looking to the southeast.

View 1: View of the East side Jennings Avenue Project area looking west.

View 2: View of Herbert Street looking northwest from Jennings Avenue on the east side of rail corridor.

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View 3: Modern multi-family housing on Jennings Avenue, immediately east of the Jennings Avenue Project area.

View 4: Rail corridor at Jennings Avenue looking southeast, from the west side of the Jennings Avenue Project area.

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The W. Sixth, W. Seventh, and W. Eighth Street Project areas consist of street crossings of the rail corridor for vehicles, pedestrians and bicyclists. W. Sixth Street, W. Seventh Street, and W. Eighth Street in the Project area are two-lane roads with adjacent sidewalks. No improved pathways currently cross the rail corridor at these sites; passengers and bicyclists use the roadway surface. Existing railroad features at these locations include two sets of parallel railroad tracks. Standard railroad warning devices are in place at each vehicular crossing, but the warning devices are not active. Landscaped street trees are located within the sidewalks in the Project area.

Figure 3.1-3 (Potential Crossing Closures Project Area Views 1-2) shows the W. Sixth Street area. View 1 shows the existing crossing from Adams Street looking east, and View 2 shows a view of the Santa Rosa Flour Mill at the W. Sixth Street crossing. Figure 3.1-4 (Potential Crossing Closures Project Area Views 3-4) shows the W. Seventh Street and W. Eighth Street crossings and surrounding areas.

The *Santa Rosa General Plan 2035* lists 22 designated scenic roadways, which are defined as a highway, road, drive, or street that, in addition to its transportation function, provides opportunities for the enjoyment of natural and man-made scenic resources (Santa Rosa 2009). None of the designated scenic roads in the General Plan are located within the Project areas. The General Plan also identifies several community focal points, including Old Courthouse Square, DeTurk Round Barn, Railroad Square water tower, St. Rose School, Hotel La Rose, Santa Rosa Creek, Luther Burbank Home and Gardens, and views to the hills. The Jennings Avenue and W. Sixth, W. Seventh, and W. Eighth Street Project areas would not be visible from any of these community focal points, except that the construction staging area for a crossing closure at W. Eighth Street may be slightly visible from the DeTurk Round Barn.

Overall Visual Sensitivity of the Project Areas

The overall visual sensitivity of the Jennings Avenue Project area and the three potential closure sites at W. Sixth Street, W. Seventh Street, and W. Eighth Street is described in terms of its visual quality, potentially affected viewers, and the exposure conditions.

The Jennings Avenue Project area has moderate visual quality. A portion of the Project area is located at and adjacent to Steele Creek, which is lined with a mixture of native oaks and other native and non-native tree species. Although surrounded by a residential area, Steele Creek within the Jennings Avenue area is characteristic of the City’s natural and un-lined stream channels that run throughout the City. The tree-lined channel provides a notable contribution to the visual quality of the area.

To the east, the affected viewers of the Jennings Avenue Project area include residents along Jennings Avenue from Herbert Street to Range Avenue, Herbert Street from Jennings Avenue to the terminus of Herbert Street, and the employees of and children attending Little People’s Playhouse at the intersection of Jennings Avenue and Herbert Street. To the west, affected viewers include residents living in the apartment complex on the north side of Jennings Avenue, as well as business employees on the south side of Jennings Avenue.

The W. Sixth, W. Seventh, and W. Eighth Street Project areas also have moderate visual quality. The three crossings are located in an area of mixed residential, commercial, and industrial uses west of Highway 101 and north of Railroad Square in the West End Neighborhood. Businesses, industrial buildings, and warehouses line the rail corridor though the area as shown on Figure 2-3 (Alternative Locations for Closure of One Crossing) in Chapter 2, Project Description.

3.1.3 Regulatory Framework

Federal

No federal plans, policies, regulations or laws related to aesthetics or visual resources are applicable to the Project.

State

California Scenic Highway Program

Sections 260 through 263 of the State Streets and Highways Code establish the California Scenic Highways Program and require local government agencies to take the following actions to protect the scenic appearance of any designated scenic corridors:

- Regulate land use and density of development;
- Provide detailed land and site planning;
- Prohibit off-site outdoor advertising and control on-site outdoor advertising;
- Pay careful attention to and control earthmoving and landscaping; and
- Scrutinize the design and appearance of structures and equipment.

Nighttime Sky – Title 24 Outdoor Lighting Standards

The California legislature passed a bill in 2001 requiring the California Energy Commission (CEC) to adopt energy efficiency standards for outdoor lighting for both the public and private sectors. The CEC adopted changes to Title 24, parts 1 and 6, Building Energy Efficiency Standards, which included changes to the requirements for outdoor lighting for residential and non-residential development. The standards regulate lighting characteristics such as maximum power and brightness, shielding, and sensor controls to turn lighting on and off.

Regional and Local

City of Santa Rosa General Plan Goals and Policies

The following are the goals and policies from the Santa Rosa General Plan 2035 that are applicable to the Project.

UD-A Preserve and enhance Santa Rosa's scenic character, including its natural waterways, hillsides, and distinctive districts.

UD-A-1 Maintain view corridors to natural ridgelines and landmarks, such as Taylor Mountain and Bennett Mountain.

UD-A-2 Strengthen and emphasize community focal points, visual landmarks, and features that contribute to the identity of Santa Rosa using design concepts and standards implemented through the Zoning Code, Design Guidelines, Preservation District Plans, Scenic Roads policies, the Downtown Station Area Specific Plan, and the Citywide Creek Master Plan.

UD-A-7 Continue the city's program of utility undergrounding.

UD-F Maintain and enhance the diverse character of Santa Rosa's neighborhoods. Promote the creation of neighborhoods – not subdivisions – in areas of new development.

View 1: View of the W. Sixth Street crossing from Adams Street looking east.

View 2: View of the Santa Rosa Flour Mill at the W. Sixth Street crossing looking north.

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View 3: View of the American Produce Company warehouse at the W. Seventh Street crossing looking northwest.

View 4: View of the W. Eighth Street crossing looking northwest toward the De Turk Winery Complex.

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UD-F-2 Protect natural topographic features such as hillsides, ridgelines and mature trees and stands of trees. Minimize grading of natural contours in new development.

Downtown Station Area Specific Plan Goals and Policies

The following are the goal and policy from the Downtown Station Area Specific Plan that are applicable to the Project.

SP-T-3 Ensure new development and streetscape projects provide pedestrian and bicycle circulation improvements.

SP-T-3.5 Work with Sonoma Marin Area Rail Transit (SMART) and the Public Utilities Commission to develop attractive fencing and landscaping treatments along the railroad right-of-way. Low-level open fencing should be encouraged.

North Santa Rosa Station Area Specific Plan Goals and Policies

The following are the goal and policies from the North Santa Rosa Station Area Specific Plan that are applicable to the Project.

UD-3 Enhance public safety and aesthetics along the length of the rail corridor

UD-3.1. Encourage SMART and the Public Utilities Commission to ensure any proposed fencing along the railroad right-of-way is attractive. Low-level open fencing is encouraged along the rail corridor that provides safety while maintaining eyes on the rail corridor.

UD-3.2. Encourage SMART to provide lighting along the railway corridor multi-use path.

Santa Rosa Design Guidelines

The following are the goals and guidelines from the Santa Rosa Design Guidelines that are applicable to the Project.

2.4.2 Design new development in and adjacent to historic preservation districts to be compatible with existing structures.

2.4.2.C Development along the West Sixth Street frontage of the SMART property, just west of the rail corridor, and at the northern end of the SMART site should be designed to be compatible in terms of scale, massing and materials with existing development in the West End neighborhood.

2.6.1 Support and encourage increased pedestrian activity downtown, and within walking distance of SMART station site.

2.6.1.B. Create a unifying aesthetic while maintaining unique character of individual sub-areas.

2.6.1.E Install street furnishings as identified in the Street Furnishings Palette Plan.

2.6.6 Provide bollards that are attractive, functional, easy to maintain and enhance the identity of the neighborhood that they are located within.

2.6.6.B. Bollards should be used to provide a barrier between vehicles and pedestrians. Care should be taken in the number of bollards placed adjacent to sidewalks, especially along narrow sidewalks. Only the total number bollards needed to provide safety for pedestrians should be used.

3.1.4 Evaluation Criteria and Significance Thresholds

Table 3.1-1 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
AES-1: Would the Project have a substantial adverse effect on a scenic vista?	Alteration of a view from a scenic vista Obstruction of a scenic vista	CEQA Guidelines, Appendix G, Checklist Item I (a)
AES-2: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?	Strong visual contrast or change altering the neighborhood character Non-compliance with the Design Guidelines Strong visual contrast or change during construction extending for more than one year	CEQA Guidelines, Appendix G, Checklist Item I (b) Santa Rosa 2035 General Plan Downtown Station Area Specific Plan Santa Rosa Citywide Creek Master Plan
AES-3: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Non-compliance with the City’s adopted Lighting Standards	CEQA Guidelines Appendix G, Checklist Item I (d); CEQA case law

Areas of No Project Impact

As explained below, the Project would not result in impacts related to one of the significance criteria identified in Appendix G of the current CEQA Guidelines. The following significance criterion is not discussed further in the impact analysis, for the following reasons:

- ***Damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a State scenic highway.***

  There are no State-designated scenic highways in the Project area (Caltrans 2014). Therefore, the significance criterion related to scenic resources within a State scenic highway is not applicable to the Project and is not discussed further.

3.1.5 Methodology

The visual impact analysis is based on field observations of the Jennings Avenue and W. Sixth, W. Seventh, and W. Eighth Street Project areas and surrounding neighborhoods conducted in 2014, as well as aerial photographs, visual simulations, computer-aided street-view tours, and review of relevant planning documents.

3.1.6 Impacts and Mitigation Measures

Table 3.1-2 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.	
AES-1: Would the Project have a substantial adverse effect on a scenic vista?	LS	LS	LS	LS
AES-2: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?	LSM	LSM	LSM	SUM
AES-3: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	LS	LS	LS	LS
AES-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to visual resources?	LS	LS	LS	LS

Notes: LS = Less than Significant
SUM = Significant and Unavoidable with Mitigation

Impact: **AES-1: Would the Project have a substantial adverse effect on a scenic vista?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

<u>Construction and Operation</u>

The Jennings Avenue site is located in an urban area developed with business and residential uses. The surrounding area is flat. There are no scenic vistas visible from the site of the proposed at-grade crossing or the rail overcrossing. Neither an at-grade rail crossing or rail overcrossing would interfere with views of a scenic vista, and the impact would be less than significant.

W. Sixth, W. Seventh, and W. Eighth Street near the rail corridor are located in an area developed with businesses, restaurants, and commercial warehouses. Views of the hills to the east from these roadways are substantially blocked by the raised freeway, or by the soundwalls and landscaping associated with the freeway. Therefore, no scenic vistas are visible from this Project area, and no impact would occur.

Mitigation: No mitigation is needed.

Impact: **AES-2: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Construction

The Preferred Project could result in temporary construction-related impacts on the visual character of the surrounding areas. Direct views of the at-grade crossing, including views of construction work areas, are available from public roadways and sidewalks in residential neighborhoods on both the east and west sides of the rail corridor. Construction activities would be visible on the east side of the rail corridor from residences along Jennings Avenue to Range Avenue, along Herbert Street near the intersection of Jennings Avenue, and from the intersection of Jennings Avenue and Herbert Street. Construction would also be visible from the Little People's Playhouse. Drivers, bicyclists, and pedestrians would have a direct view of construction activities from Range Avenue along Jennings Avenue to the west.

Construction activities would be visible on the west side of the rail corridor from residences and businesses along Jennings Avenue to N. Dutton Avenue and from businesses located at the intersection of Jennings Avenue and N. Dutton. Drivers, bicyclists, and pedestrians would have a direct view of construction activities along Jennings Avenue from Eardley Avenue looking east.

Construction activities, including staging areas would be visible over an approximately two-month period. Although construction in the area would be visible from areas throughout the residential neighborhood and businesses and from travelers on public roadways, construction activities would be temporary in nature and of a relatively short duration. Therefore, the construction-phase aesthetic impact would be less than significant.

Construction of the Preferred Project would require removal of up to three 12- to 15-inch diameter valley oak trees to accommodate construction of the at-grade crossing. Removal of the trees would not significantly alter the views or create a strong visual contrast along Steele Creek because the number and visual mass of trees remaining in the area is more than ten times as much as would be removed. Therefore, visual contrast from tree loss would be limited and would result in a less-than-significant aesthetic impact.

The visual quality at the W. Sixth, W. Seventh, and W. Eighth Street Project area is considered moderate. Construction activities would be visible by pedestrians, bicyclists, drivers, tourists, and residents along public roadways and sidewalks in the residential, commercial, and industrial area. Construction activities, including construction staging areas and construction activities would be visible from W. Sixth, W. Seventh, and W. Eighth Streets and from Adams Street, Wilson Street, and Davis Street.

Installation of a rail crossing closure at either W. Sixth, W. Seventh, or W. Eighth Street would be completed in approximately one to two weeks and would not require tree removal. Several street trees adjacent to the closure area at W. Sixth Street may require trimming to provide sufficient space to install the closure components and fencing. Given the temporary nature and short duration of

construction activities, and the minimal tree trimming required, the construction-phase aesthetic impact would be less than significant.

Operation

To assist in the evaluation of impacts on visual character, a visual simulation of the Preferred Project at-grading rail crossing is provided in Figure 3.1-5 (At-grade Rail Crossing – Visual Simulation). The view of the simulation is from Jennings Avenue west of the rail corridor looking east towards the at-grade crossing. The figure also illustrates the existing condition at the Jennings Avenue site.

The existing area at Steele Creek is of moderate visual quality as viewed from the neighborhood surrounding the proposed crossing site. The trees along the creek offer a natural landscape view in the neighborhood. The location has a moderate exposure to residents, bicyclists, pedestrians and motorists primarily along Jennings Avenue with more limited views from Range Avenue looking west and from N. Dutton Avenue looking east. The overall visual sensitivity would be moderate for this area.

The Preferred Project at-grade rail crossing would include components that would partially replace the existing guard rail that currently blocks vehicle access across the rail tracks. As shown in Figure 3.1-5 (At-Grade Rail Crossing – Visual Simulation), a portion of the existing guard rail would remain in place, or a similar new guard rail would be installed, and rail crossing components would be added to allow safe access for bicyclists and pedestrians across the rail corridor.

The other visible components would include pathway improvements, flashing light signal assemblies with automatic gate arms, warning signs, pedestrian gates, hand rails, paving, walkways, and fencing as shown on the simulated view in Figure 3.1-5 (At-Grade Rail Crossing – Visual Simulation). Vandal-resistant fencing, such as wrought-iron fencing, 5 to 6 feet in height would be installed to direct pedestrians to the crossing as shown in the simulated view.

In the context of the neighborhood setting and the moderate visual sensitivity of the area, including Steele Creek, the proposed at-grade rail crossing with the crossing barrier, crossing lights, and fencing, would be visible from the public roadways and sidewalks surrounding the new crossing, and the crossing would contrast with the existing area to a moderate degree. However, the limited tree removal and the ground-level crossing improvements would not cause a strong contrast with the existing visual character. Therefore, the aesthetic impact of the at-grade crossing would be less than significant.

The potential rail crossing closure at W. Sixth, W. Seventh, or W. Eighth Streets would be located in an area predominately composed of small businesses, restaurants, warehouses, and residences, including, for example, the Sixth Street Playhouse and the Chop's teen center. The potential crossing closure sites would be visible from the streets and sidewalks approaching the closures. The visual quality of the area is moderate at each of the potential crossing closure locations.

Closure of an at-grade rail crossing at W. Sixth, W. Seventh, or W. Eighth Street would include removal of the existing roadway crossing surfaces from the SMART rail corridor. Guard rails and vandal-resistant fencing, such as wrought

iron fencing, 5 to 6 feet in height, would be installed across the roadway closure as shown on Figure 2-3 (Alternative Locations for Closure of One Rail Crossing) in the Project Description.

The three potential crossing closure sites have a high exposure to bicyclists, pedestrians and motorists from publicly accessible roadways in the area, including W. Sixth Street, W. Seventh Street, W. Eighth Street, Wilson Street, Adams Street, and Davis Street. The introduction of new elements, i.e., the fencing and guard rails, into a crossing closure site has the potential to degrade the existing visual character at any of the three potential closure sites. Visual impacts could occur if the fencing and guard rail design is incompatible in the size, scale, and design to the surrounding neighborhoods. Therefore, the aesthetic impact of a rail crossing closure at W. Sixth, W. Seventh, or W. Eighth Street would be significant.

Mitigation: **Mitigation Measure CR-2: Protect Historic Resources *(Preferred Project)***

This mitigation measure is defined in Impact CR-2 of Section 3.4, Cultural Resources.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Mitigation Measure CR-2 would require the fencing and the use of bollards designed to protect the integrity of the surrounding areas. Implementation of this mitigation measure would reduce impacts on aesthetics to a less-than-significant level for the W. Sixth, W. Seventh, or W. Eighth crossing closure by ensuring that the new features are designed in a manner that is compatible in size, scale, and design with the surrounding community.

Analysis: *Rail Overcrossing Alternative (Significant)*

Construction

The Rail Overcrossing Alternative would result in temporary construction-related impacts on the visual character of the surrounding areas. Construction of the Rail Overcrossing Alternative is anticipated to require approximately six months to complete starting in 2016 or 2017.

Direct views of the crossing, including views of construction work areas, would be visible from public roadways and public areas in residential neighborhoods on both the east and west sides of Jennings Avenue as described for the Preferred Project above. In addition, the larger construction area, larger equipment, and taller structure would be more visible from locations further along Jennings Avenue to the east and the west of the crossing.

Construction activities for the rail overcrossing would be visible over a six-month period during which viewers in the surrounding neighborhood and along local roadways would see construction vehicles, cranes, concrete pumping trucks, and other equipment needed to construct the overcrossing and the access ramps.

Construction of the Rail Overcrossing Alternative at Jennings Avenue would require the removal of up to approximately 40 trees greater than 4 inches in diameter.

Existing view of rail corridor from Jennings Avenue looking east.

Visual simulation of at-grade rail crossing from Jennings Avenue looking east.

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Given the height of the trees and the location relative to viewers at public spaces in the surrounding neighborhood, including residences of the apartment complex immediately adjacent to the overcrossing, the trees are a prominent contributor to the neighborhood's character and visual context. Twenty-seven trees would be removed from the east side of the rail corridor to accommodate the overcrossing ramp construction along the eastern edge of the right-of-way. Most of the trees are native valley oaks ranging in size from 4 inches to 22 inches in diameter. The five trees on the western side of the rail corridor to be removed include valley oaks, redwood, and non-native trees along Jennings Avenue.

Excavations associated with construction of the Rail Overcrossing Alternative may also damage the root systems of eight additional trees adjacent to the construction area. These trees would be located within 10 feet of the proposed excavation limits and would be subject to possible damage during construction due to activities within the root zone and under the tree canopy.

Removal of the trees would result in a strong visual contrast, especially from the neighborhood east of the rail corridor, and would result in a significant aesthetic impact.

<u>Operation</u>

To assist in the evaluation of impacts on visual character, a visual simulation of the Rail Overcrossing Alternative is provided on Figure 3.1-6 (Rail Overcrossing Alternative – Visual Simulation). The view of the simulation is from Jennings Avenue west of the rail corridor looking east.

As discussed in the Setting section, the Jennings Avenue Project site is located in a residential neighborhood. The east side of the SMART right-of-way includes residences and a child care center. The west side is a mix of residences and businesses. The crossing location is currently visible from public locations primarily along Jennings Avenue. The crossing is also visible from public areas at the apartments immediately adjacent to the right-of-way on the east side of the crossing and from a business on the west side of the crossing. The Rail Overcrossing Alternative at Jennings Avenue would include grade-separated ramps, stairs, and an elevated crossing over the SMART rail corridor. The conceptual layout of the rail overcrossing is shown on Figure 2-4 (Rail Overcrossing Alternative Conceptual Design) in Chapter 2, Project Description. A site improvement plan for the rail overcrossing is shown on Figure 2-5 (Rail Overcrossing Alternative Improvements Plan) in Chapter 2, Project Description.

The overcrossing would include concrete columns to support the pedestrian and bicycle access ramps on both the east side and west side of the rail corridor. The total length of the ramps and overcrossing would be approximately 900 to 1,000 feet. On the west side of the rail corridor, the ramp would initially head west toward N. Dutton Avenue and would then switch back to the east toward the rail corridor. On the east side of the rail corridor, the ramp would initially head south within the SMART right-of-way and would then switch back to the north toward Jennings Avenue. Stairs would be provided on either side of the rail corridor to provide an alternate means of accessing the crossing structure.

The preliminary design of the overcrossing allows for the integration of the future SMART pathway as identified in Chapter 2, Project Description.

The rail crossing would be designed in compliance with federal and State regulations governing the clearance requirements for railroads. Overcrossings must have a minimal clearance of 23 feet above the rail corridor and a minimum clearance of 10 feet from the centerline of the track on both sides. To meet the regulatory design requirements, the rail overcrossing would be approximately 30 feet tall at the top of the hand railing and fencing.

The one-and two-story office buildings on Jennings Avenue between N. Dutton and the overcrossing are approximately 15 and 25 feet tall, respectively, and would be shorter than the new ramp. The two-story residences on the north side of Jennings, west of the crossing, are estimated at approximately 20 to 22 feet tall. The second story of these buildings would be below eye-level with the new ramp, although there are no windows that would face directly at the ramp from these residences.

The two- and three-story residences along Jennings Avenue east of the crossing are estimated to be 35 feet tall with western facing windows at about 25 feet high for the third-story apartments and at about 15 feet for the second-story apartment. The tree-lined parking facility for the Arroyo Point Apartments would partially screen views of the overcrossing structure from residences with windows facing the rail corridor, though a large portion of the ramp would still be seen.

The crossing immediately over the rail corridor would be visible for the entire length of Jennings Avenue between Range Avenue to the east and Eardley Avenue to the west. Motorists, pedestrians, and bicyclists on public roadways would have a view of the crossing and partial views of the access ramps.

In the context of the neighborhood setting and the moderate visual sensitivity of the area, including Steele Creek, the rail overcrossing would create a high visual contrast with the existing condition, as indicated in the simulation. The impact would therefore, be significant.

Mitigation: **Mitigation Measure AES-1: Tree Removal and Replacement (*Rail Overcrossing Alternative)***

Prior to the removal of any trees within the construction area boundary, the City shall determine if any trees can be retained without causing conflicts with construction equipment and/or safety risks during construction at the site. A qualified arborist shall conduct the tree retention survey. Any trees found not to conflict with construction activities or create safety risks shall be protected during construction activities following the requirements presented in Mitigation Measure BIO-5.

For each tree to be removed, the City shall plant replacement trees on-site to the extent allowable given the space available in the rail corridor. Each replacement tree shall be in a minimum 15-gallon container and shall be in compliance with the Santa Rosa Tree Ordinance. The on-site plantings shall be located such that the visual continuity of the remaining trees along the rail corridor is restored to the extent feasible.

Existing view of Jennings Avenue and rail corridor looking east.

Visual simulation of Jennings Avenue and rail overcrossing looking east.

N

City of Santa Rosa
Jennings Avenue Pedestrian and
Bicycle Rail Crossing EIR

Rail Overcrossing Alternative
Visual Simulation

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Figure 3.1-6

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To the extent tree replacement on-site is not feasible, replacement trees shall be planted off-site in substantial compliance with the City's Tree Ordinance as described in Mitigation Measure BIO-4.

In all cases, the planting ratio shall be a minimum of 1:1 (i.e., one tree planted for each tree removed). Replanting shall occur within the first year after completion of construction. The City shall monitor plantings annually for five years after project completion to ensure that the replacement planting(s) has developed and that the trees survive. If necessary, the City shall implement additional measures (e.g., replanting, installation of irrigation) to address continued survival of the plantings, and shall re-plant additional trees should a significant amount of the original plantings not survive during the monitoring period.

Mitigation Measure BIO-4: Compliance with Santa Rosa Tree Ordinance *(Preferred Project and Rail Overcrossing Alternative)*

This mitigation measure is defined in Impact BIO-5 of Section 3.3, Biological Resources.

Mitigation Measure BIO-5: Minimize Impacts to Trees Adjacent to Construction Areas *(Rail Overcrossing Alternative)*

This mitigation measure is defined in Impact BIO-5 of Section 3.3, Biological Resources.

Mitigation Measure AES-2: Colorize and Texturize Overcrossing Concrete Surfaces *(Rail Overcrossing Alternative)*

The City shall determine a color and texture for the external concrete surfaces of the overcrossing to reduce the contrast of the overcrossing with the surrounding vegetation and buildings, using the services of a landscape architect.

After Mitigation: *Rail Overcrossing Alternative (Significant and Unavoidable)*

It is unknown at this point how many trees may be retained without causing conflicts with construction activities at the site. However, it is assumed that not all trees in the construction area can be safely retained and protected during construction. Therefore, Mitigation Measure AES-1 provides tree replacement requirements designed to reestablish the neighborhood character that the tree-lined area provides. Mitigation Measure BIO-4 and BIO-5 would also be required to guide tree replacement requirements for trees subject to the City's Tree Ordinance that are lost during construction and to protect trees during construction. Protection of trees during construction and replacement of the trees removed during construction would reduce the impacts, but the impact would remain significant and unavoidable because replacement trees would require a considerable amount of time to mature and the visual contrast resulting from the loss of trees in the area would remain.

Given the constraints of the overcrossing location, the need for a clearance of 23 feet over the rail corridor, and the ADA design requirements for gradual inclines, there is little flexibility for the massing and scale of an overcrossing design at the site. Mitigation Measure AES-2 would provide for design changes that could help reduce the visual contrast of the overcrossing. Nevertheless, it is not feasible to change the placement and size of the overcrossing sufficiently to reduce the

strong visual contrast and the impact on the visual character of the area, and the impact of the overcrossing would remain significant and unavoidable even after the mitigation is implemented.

Impact: **AES-3: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

Construction

Anticipated daytime work hours would be 7:00 a.m. to 7:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. on Saturdays. Nighttime construction work would be required to complete either the at-grade crossing or the rail overcrossing because construction at the Jennings Avenue Project site cannot occur during the day while trains are operating along the tracks. Based on the type and extent of work to be performed within the SMART right-of-way, construction of the of the Preferred Project could require up to eight nighttime work periods and the Rail Overcrossing Alternative could require up to 53 nighttime work periods. Nighttime work for the closure of an at-grade rail crossing at W. Sixth, W. Seventh, or W. Eighth Street could require up to four nighttime work periods to complete.

Lighting would be needed at the construction site and the staging areas would also be used on an as-needed basis. Staging areas would not have security lighting that would be illuminated overnight. Lighting would be used only when workers need access at night.

As part of the Project, a lighting plan would be developed to guide the use of lighting during Project construction in such a way as to minimize nuisance and inconvenience to neighboring properties (see Chapter 2, Project Description). The contents of this lighting plan are proposed to include – but not be limited to – information regarding: time of use, placement relative to sensitive viewers, type of mechanism(s), specifications (e.g., type of shades, bulbs).

Because the Project would include implementation of a lighting plan to minimize nuisance and inconvenience to neighboring properties, and because such lighting activities would be temporary in nature and would be located within an existing urban/suburban area with existing residential and commercial street lighting, the aesthetic impact related to temporary lighting for both the Preferred Project and the Rail Overcrossing Alternative would be less than significant.

Operation

A new street lamp would be installed at the southwest corner of Herbert Street and Jennings Avenue on the east side of the Jennings Avenue Project area for the Preferred Project. The light would meet the Street Light Standards (City of Santa Rosa 1992), and therefore would not result in a new light source that would adversely affect nighttime views in the area. The impact would be less than significant.

The rail overcrossing would be lighted for nighttime safety purposes. Recessed LED pathway lighting would be incorporated along both sides of the overcrossing ramps, and would be spaced approximately 16 feet apart. The recessed lighting would meet the current requirements of Title 24 of the California Code of Regulations for outdoor, non-residential lighting use and design. The design requirements for lighting as required in the California Code of Regulations require that lighting would not create substantial light or glare which would adversely affect day or nighttime views in the area, and the impact would be less than significant.

Mitigation: No mitigation is needed.

3.1.7 Cumulative Impacts

Impact: AES-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to visual resources?

Analysis: Preferred Project – At-grade Rail Crossing (Less than Significant)

Rail Overcrossing Alternative (Less than Significant)

The Preferred Project and the Rail Overcrossing Alternative have no impact on scenic vistas, and therefore, would not contribute to a cumulative impact on scenic vistas.

In the Jennings Avenue Project area, there is only one cumulative project (Range Ranch) from Table 3-1 (Projects Considered for Cumulative Impacts) that has the potential for cumulative impacts relative to visual character. However, it is unlikely that any viewer could see both projects within the same view, and therefore, a significant cumulative impact would not occur to visual character for either the Preferred Project or the Rail Overcrossing Alternative.

In the W. Sixth, W. Seventh, and W. Eighth Street Project areas, several projects have the potential for cumulative impacts relative to aesthetics. Implementation of Mitigation Measure CR-2 would require the use of fencing and bollards designed in a manner that is compatible in size, scale, and design with the surrounding community. Therefore, the Preferred Project's contribution to a cumulative aesthetic impact would not be considerable.

Although the Preferred Project includes a new street lamp and the Rail Overcrossing Alternative would additionally have recessed LED pathway lighting, none of the projects in Table 3-1 (Projects Considered for Cumulative Impacts) would be close enough to the Project site to collectively create a cumulative impact. Therefore, a significant cumulative impact would not occur to light and glare.

Mitigation: No mitigation is needed.

3.1.8 References

California Department of Transportation (Caltrans). 2014. *California Designated Scenic Highway Routes*. Website Accessed July 2014 at: http://www.dot.ca.gov/hq/LandArch/scenic_highways/

Santa Rosa, City of (Santa Rosa). 1992. *Street Light Standards*.

Santa Rosa. 2007. *Downtown Station Area Specific Plan*. October.

Santa Rosa. 2009. *Santa Rosa General Plan 2035*. November.

Wildlife Research Associates (WRA) and Jane Valerius Environmental Consulting (Valerius). 2014. *Biological Resource Analysis and Habitat Assessment*. July.

3.2 Air Quality

This section evaluates the potential impacts related to air quality during construction and operation of the Project. To provide the basis for this evaluation, the Setting section provides an overview of the local air quality basin and the regulations applicable to the Project. The evaluation section establishes the thresholds of significance, evaluates potential air quality impacts, and describes appropriate mitigation measures, as necessary.

3.2.1 Impacts Evaluated in Other Sections

The following subject is related to air quality, but is evaluated in other sections of this document:

- Potential impacts to greenhouse gas emissions are addressed in Section 3.6, Greenhouse Gas Emissions.

3.2.2 Setting

Topography and Climate

The Project site is located in Sonoma County, which is within the San Francisco Bay Area Air Basin (Air Basin). Ambient concentrations of air pollutants in the Project area are a product of the quantity of pollutants emitted by local sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect air quality and pollutant transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight.

The San Francisco Bay Area Air Basin is divided into subregions. The subregion that stretches from Santa Rosa to the San Pablo Bay is often considered as two different valleys: the Cotati Valley in the north and the Petaluma Valley in the south. The Project is located in the Cotati Valley subregion. To the east, the valley is bordered by the Sonoma Mountains, while to the west is a series of low hills, followed by the Estero Lowlands, which open to the Pacific Ocean. This low-terrain area allows marine air to travel into the Air Basin and is known as the Petaluma Gap.

Wind patterns in the Petaluma and Cotati Valleys are strongly influenced by the Petaluma Gap, with winds flowing predominantly from the west. As marine air travels through the Petaluma Gap, it splits into northward and southward paths moving into the Cotati and Petaluma Valleys. The southward path crosses San Pablo Bay and moves eastward through the Carquinez Strait. The northward path contributes to Santa Rosa's prevailing winds from the south and southeast.

When the ocean breeze is weak, strong winds from the east can predominate, carrying pollutants from the Central Valley and the Carquinez Strait. During these periods, upvalley flows can carry the polluted air as far north as Santa Rosa. The annual average wind speed in Santa Rosa is 5 mph.

Summer maximum temperatures for this subregion are in the low-to-mid-80's, while winter maximum temperatures are in the high-50's to low-60's. Summer minimum temperatures are around 50 degrees, and winter minimum temperatures are in the high 30's.

The Cotati Valley has a higher pollution potential than does the Petaluma Valley. The Cotati Valley lacks a gap to the sea, contains a larger population and has natural barriers at its northern and eastern ends. There are also industrial facilities in and around Santa Rosa. Both valleys are threatened by increased motor vehicle traffic and the associated air contaminants.

Ambient Air Quality Standards

Current regulated air pollutants, as indicators of ambient air quality, include: ozone, particulate matter (PM), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead. Because these are the most prevalent air pollutants known to be harmful to human health and extensive health-effects criteria documents are available, they are commonly referred to as criteria air pollutants.

Air pollutant levels are typically described in terms of their “concentration,” which refers to the amount of pollutant material per volumetric unit of air. Concentrations are measured in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The federal and California Clean Air Acts have established ambient air quality standards for different pollutants. National Ambient Air Quality Standards (NAAQS) were established for six criteria pollutants including CO, ozone, PM, NO_2, SO_2, and lead. Pollutants regulated under the California Clean Air Act are similar to those regulated under the federal Clean Air Act. In many cases, the California Ambient Air Quality Standards (CAAQS) are more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. Both the U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (ARB) review ambient air quality standards on a regular basis and make necessary adjustments in response to updated scientific information.

The ARB has identified contaminants that can cause cancer or other health effects as toxic air contaminants (TACs).

California and national ambient air quality standards, and corresponding attainment status, are shown in Table 3.2.1. Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant, using the most recent three years of monitoring data. The State is designated nonattainment for 8-hour and 1-hour ozone, 24-hour and annual PM_{10}, and annual $PM_{2.5}$. The national status is nonattainment for 8-hour ozone and 24-hour $PM_{2.5}$. The U.S. EPA considers areas that are not likely to violate ambient air quality standards or where extensive monitoring networks are not established, as “Unclassified.”

Table 3.2-1 Relevant California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	California Attainment Status	National Standards	National Attainment Status
Ozone	8-hour	0.070 ppm (137 µg/m^3)	Nonattainment	0.075 ppm (147µg/m^3)	Nonattainment
	1-hour	0.09 ppm (180 µg/m^3)	Nonattainment	None	—
Carbon Monoxide	1-hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment
	8-hour	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Attainment
Nitrogen Dioxide	1-hour	0.18 ppm (339 µg/m^3)	Attainment	0.100 ppm (188 µg/m^3)	Unclassified
	Annual	0.030 ppm (57 µg/m^3)	—	0.053 ppm (100 µg/m^3)	Attainment
Sulfur Dioxide	1-hour	0.25 ppm (655 µg/m^3)	Attainment	0.075 ppm (196 µg/m^3)	Attainment
	24-hour	0.04 ppm (105 µg/m^3)	Attainment	0.14 ppm (365 µg/m^3)	Attainment
	Annual	None	—	0.03 ppm (56 µg/m^3)	Attainment
Respirable Particulate Matter (PM_{10})	24-hour	50 µg/m^3	Nonattainment	150 µg/m^3	Unclassified
	Annual	20 µg/m^3	Nonattainment	None	—
Fine Particulate Matter ($PM_{2.5}$)	24-hour	None	—	35 µg/m^3	Nonattainment
	Annual	12 µg/m^3	Nonattainment	15 µg/m^3	Attainment

Source: BAAQMD 2014

Notes: ppm = parts per million
mg/m3 = milligrams per cubic meter
µg/m^3 = micrograms per cubic meter

Criteria Air Pollutants

Ozone

Ground-level ozone is the principal component of smog. Ozone is not directly emitted into the atmosphere, but instead forms through a photochemical reaction of reactive organic gases (ROG) and nitrogen oxides, which are known as ozone precursors. Ozone levels are highest from late spring through autumn when precursor emissions are high and meteorological conditions are warm and stagnant. Motor vehicles create the majority of ROG and NO_X emissions in the Cotati Valley sub-region. Exposure to levels of ozone above current ambient air quality standards can lead to human health effects such as lung inflammation and tissue damage and impaired lung functioning. Ozone exposure is also associated with symptoms such as coughing, chest tightness, shortness of breath, and the worsening of asthma symptoms (BAAQMD 2011). The greatest risk for harmful health effects belongs to outdoor workers, athletes, children and others who spend greater amounts of time outdoors during periods of high ozone or $PM_{2.5}$ levels (e.g., “Spare the Air” days).

Suspended and Inhalable Particulate Matter

PM is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. Particles 10 microns or less in diameter are defined as "respirable particulate matter" or "PM_{10}." Fine particles are 2.5 microns or less in diameter ($PM_{2.5}$) and, while also respirable, can contribute significantly to regional haze and reduction of visibility. Inhalable particulates come from smoke, dust, aerosols, and metallic oxides. Although particulates are found naturally in the air, most particulate matter found in the study area is emitted either directly or indirectly by motor vehicles, industry, construction, agricultural activities, and wind erosion of disturbed areas. Most $PM_{2.5}$ is comprised of combustion products such as smoke. Extended exposure to PM can increase the risk of chronic respiratory disease (BAAQMD 2011). PM exposure is also associated with increased risk of premature deaths, especially in the elderly and people with pre-existing cardiopulmonary disease. In children, studies have shown associations between PM exposure and reduced lung function and increased respiratory symptoms and illnesses

Nitrogen Dioxide (NO_2)

Nitrogen dioxide is an essential ingredient in the formation of ground-level ozone pollution. NO_2 is one of the nitrogen oxides (NO_X) emitted from high-temperature combustion processes, such as those occurring in trucks, cars, and power plants. Home heaters and gas stoves also produce NO_2 in indoor settings. Besides causing adverse health effects, NO_2 is responsible for the visibility reducing reddish-brown tinge seen in smoggy air in California. NO_2 is a reactive, oxidizing gas capable of damaging cells lining the respiratory tract. Studies suggest that NO_2 exposure can increase the risk of acute and chronic respiratory disease (BAAQMD 2011).

Carbon Monoxide (CO)

CO is a non-reactive pollutant that is toxic, invisible, and odorless. It is formed by the incomplete combustion of fuels. The largest sources of CO emissions are motor vehicles, wood stoves, and fireplaces. Unlike ozone, CO is directly emitted to the atmosphere. The highest CO concentrations occur during the nighttime and early mornings in late fall and winter. CO levels are strongly influenced by meteorological factors such as wind speed and atmospheric stability. The health threat from elevated ambient levels of CO is most serious for those who suffer from heart disease, like angina, clogged arteries, or congestive heart failure. For a person with heart disease, a single exposure to CO at relatively low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. High levels of CO can affect even healthy people. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death.

Sulfur Dioxide (SO_2)

SO_2 is a colorless gas with a strong odor. It can damage materials through acid deposition. It is produced by the combustion of sulfur-containing fuels, such as oil and coal. Refineries, chemical plants, and pulp mills are the primary industrial sources of sulfur dioxide emissions. Sulfur dioxide concentrations in the Bay Area are well below the ambient standards. Adverse health effects associated with exposure to high levels of sulfur dioxide include irritation of lung tissue, as well as increased risk of acute and chronic respiratory illness.

Toxic Air Contaminants

TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer or serious illness) and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level. The identification, regulation and monitoring of TACs is relatively new compared to that for criteria air pollutants that have established ambient air quality standards. TACs are regulated or evaluated on the basis of risk to human health rather than comparison to an ambient air quality standard or emission-based threshold.

Diesel exhaust is the predominant TAC in urban air with the potential to cause cancer. It is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to the ARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the ARB, and are listed as carcinogens either under the State's Proposition 65 or under the federal Hazardous Air Pollutants program.

TACs are measured for their increased cancer risk and non-cancer risk on sensitive receptors. Sensitive receptors are locations where an identifiable subset of the general population (children, asthmatics, the elderly, and the chronically ill) that is at greater risk than the general population to the effects of air pollutants are likely to be exposed. These locations include residences, schools, playgrounds, childcare centers, retirement homes, hospitals, and medical clinics. The closest sensitive receptors to the Project site are residences located on Jennings Avenue (west of the rail corridor) adjacent to the north Project boundary. The Little People Playhouse daycare is located north of the Project site at the corner of Jennings Avenue and Herbert Street. Additional residential sensitive receptors are to the northeast and southeast of the Project boundaries (on the east side of the rail corridor).

Existing Pollution Levels

Ambient air quality is measured in Santa Rosa on 5th Street by the ARB. Table 3.2.2 reports those air pollutant levels for which the area is in nonattainment, measured over the past five years (2009 to 2012). In recent years, measured air pollutants concentrations in the region have not exceeded State or federal standards.

Table 3.2-2 Measured Air Pollutant Concentrations at Santa Rosa 5th Street Monitoring Station

Pollutant	Average Time	Measured Air Pollutant Levels				
		2009	2010	2011	2012	2013
Ozone	1-Hour	0.086 ppm	0.084 ppm	0.073 ppm	0.064 ppm	0.074 ppm
	8-Hour	0.066 ppm	.068 ppm	0.054 ppm	0.052 ppm	0.065 ppm
Respirable Particulate Matter (PM_{10})	24-Hour	na	na	na	na	na
	Annual	na	na	na	na	na
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	29 µg/m3	27 µg/m3	33 µg/m3	26 µg/m3	28 µg/m3
	Annual	8.4 µg/m3	7.3 µg/m3	8.6 µg/m3	8.3 µg/m3	8.6 µg/m3

Source: ARB website, accessed on 8/11/14at: http://www.arb.ca.gov/adam/index.html

3.2.3 Regulatory Framework

The federal Clean Air Act of 1977 governs air quality in the U.S. In addition to being subject to federal requirements, air quality in California also is governed by more stringent regulations under the California Clean Air Act. At the federal level, the U.S. EPA administers the Clean Air Act. The California Clean Air Act is administered by the California Air Resources Board (ARB) and by the Air Quality Management Districts at the regional and local levels. The Bay Area Air Quality Management District (BAAQMD) regulates air quality at the regional level, which includes Sonoma County.

Federal Clean Air Act

The U.S. EPA is responsible for enforcing the federal Clean Air Act which establishes the NAAQS. The U.S. EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The U.S. EPA has jurisdiction over emission sources and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by ARB.

California Air Resources Board

In California, the ARB, which is part of the California Environmental Protection Agency, is responsible for meeting the State requirements of the federal Clean Air Act, administering the California Clean Air Act, and establishing the CAAQS. The California Clean Air Act, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. The ARB regulates mobile air pollution sources, such as motor vehicles. It is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. ARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level.

Bay Area Air Quality Management District

The BAAQMD is the regional agency responsible for air quality regulation within the Air Basin, regulating air quality through planning and review activities. The BAAQMD has permit authority over most types of stationary emission sources and can require stationary sources to obtain permits, impose emission limits, set fuel or material specifications, or establish operational limits to reduce air emissions. The BAAQMD's responsibilities include operating an air quality monitoring network as well as awarding grants to reduce motor vehicle emissions, conducting public education campaigns, and many other activities.

To protect public health, BAAQMD has adopted plans to achieve ambient air quality standards. BAAQMD must continuously monitor its progress in implementing attainment plans and must periodically report to ARB and the U.S. EPA. It must also periodically revise its attainment plans to reflect new conditions and requirements.

In 2010, BAAQMD adopted the *Bay Area 2010 Clean Air Plan* (2010 Clean Air Plan) (BAAQMD 2010). The plan is meant to demonstrate progress toward meeting the more stringent 1-hour ozone CAAQS. This air quality plan addresses the California Clean Air Act and updates the most recent ozone plan, the 2005 Ozone Strategy. Unlike previous Bay Area Clean Air Plans, the 2010 Clean Air Plan is a multi-pollutant air quality plan addressing four categories of air pollutants:

- Ground-level ozone and the key ozone precursor pollutants (reactive organic gases and NO_X), as required by State law;
- Particulate matter, primarily $PM_{2.5}$, as well as the precursors to secondary $PM_{2.5}$;
- Toxic air contaminants; and
- Greenhouse gases.

The Plan includes 55 Control Measures in five categories: stationary and area source; mobile source; transportation control; land use and local impact; and energy and climate. These measures are primarily policy-level and would be implemented by BAAQMD and the Metropolitan Transportation Commission (examples: establishing new emission limits on stationary sources, requiring new control measures on industrial facilities, implementing public education programs, promoting trip reduction programs, etc.). The measures do not directly apply to the construction of a small infrastructure project, such as the Jennings Avenue Pedestrian and Bicycle Rail Crossing Project.

City of Santa Rosa General Plan Goals and Policies

The following are the goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.

OSC-J Take appropriate actions to help Santa Rosa and the larger Bay Area region achieve and maintain all ambient air quality standards.

OSC-J-1 Review all new construction projects and require dust abatement actions as contained in the CEQA Handbook of the Bay Area Air Quality Management District.

North Santa Rosa Station Area Specific Plan Goals and Policies

There are no goals and policies from the *North Santa Rosa Station Area Specific Plan* that are applicable to the Project in the context of air quality.

Downtown Station Area Specific Plan Goals and Policies

There are no goals and policies from the *Downtown Station Area Specific Plan* that are applicable to the Project in the context of air quality.

3.2.4 Evaluation Criteria and Significance Thresholds

Table 3.2-3 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
AQ-1: Would the Project violate an air quality standard or result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	Exceedance of threshold identified in Table 2-1 of BAAQMD CEQA Air Quality Guidelines. Application of appropriate dust abatement actions/basic measures in Table 8-1 of BAAQMD CEQA Air Quality Guidelines.	BAAQMD CEQA Air Quality Guidelines. City of Santa Rosa General Plan 2035
AQ-2: Would the Project expose sensitive receptors to substantial pollutant concentrations?	Increased cancer risk of > 10 in a million. Increased non-cancer risk of >1.0 Hazard Index. Ambient $PM_{2.5}$ > $0.8 ug/m^3$	BAAQMD CEQA Air Quality Guidelines.

Areas of No Project Impact

As explained below, construction of the Project would not result in impacts related to several Checklist questions for air quality contained in Appendix G of the current CEQA Guidelines. For the reasons presented below, the following evaluation criteria are not applicable to the Project.

- ***Create objectionable odors affecting a substantial number of people.***

  Facilities that are considered to potentially create objectionable odors include wastewater treatment plants, landfills, asphalt plants, coffee roasters, restaurants, and food processing (BAAQMD 2011). Construction and operation of the Project would not create a new source of objectionable odors nor would it create a new receptor near an odor source. Therefore, there would be no impact from odors, and this significance criterion is not discussed further.

- ***Conflict with or obstruct implementation of the applicable air quality plan.***

  Per the BAAQMD Air Quality CEQA Guidelines, the BAAQMD considers a project consistent with the Clean Air Plan if it: 1) can be concluded that a project supports the primary goals of the Plan (by showing that the project would not result in significant and unavoidable air quality impacts); 2) includes applicable control measures from the Plan, and; 3) does not disrupt or hinder implementation of any Plan control measure.

  The primary goals of the 2010 Clean Air Plan are to protect air quality, public health, and the climate. Because the Project would not result in a significant and unavoidable air quality impact (refer to Impact AQ-2 below), the Project would not conflict with the primary goals of the Plan. The Plan includes 55 Control Measures in five categories: stationary and area source; mobile source; transportation control; land use and local impact; and energy and climate. The Project does not include a new stationary source or new permanent mobile

sources, does not introduce a new land use, and would not use a substantial amount of energy during operation. In addition, the magnitude and nature of this project are too small to affect air quality or hinder implementation of control measures. The Project would not conflict with or obstruct the air quality plan; therefore, there would be no impact and this significance criterion is not discussed further.

3.2.5 Methodology

Use of BAAQMD Thresholds

The BAAQMD CEQA thresholds were recently invalidated by a trial court because BAAQMD did not itself do a CEQA evaluation of the thresholds before their adoption. The Court, however, did not rule on or question the adequacy of the BAAQMD CEQA Air Quality Guidelines, including the impact assessment methodologies, or the evidentiary basis supporting the thresholds, which are included in the Guidelines (updated in May 2011). The City, as Lead Agency, has the discretion to use the BAAQMD CEQA Air Quality Guidelines and methodology for analyzing air quality impacts under CEQA based on the evidence and technical studies supporting the Guidelines. The following air quality analysis utilizes the impact assessment methodologies presented in the BAAQMD CEQA Air Quality Guidelines (BAAQMD 2011).

Modeling

A construction community risk assessment was prepared (Illingworth & Rodkin 2014). The assessment focused on modeling on-site construction activity using construction fleet information estimated for the Project. Construction period emissions were modeled using the California Emissions Estimator Model, Version 2013.2.2 (CalEEMod) along with projected construction activity. CalEEMod provided total annual exhaust emissions (all of which was conservatively assumed to be diesel particulate matter) for the off-road construction equipment and for exhaust emissions from on-road vehicles (haul trucks, vendor trucks, and worker vehicles). A trip length of 0.3 miles was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site.

The U.S. EPA ISCST3 dispersion model was used to calculate concentrations of diesel particulate matter (DPM) and $PM_{2.5}$ at existing sensitive receptors (residences, daycare facilities, etc.) in the vicinity of the project construction. The ISCST3 dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects. Emissions from vehicle travel on-site and off-site within about 1,000 feet of the construction site (the recommended "zone of influence" by BAAQMD) were distributed throughout the modeled area sources. Daytime construction emissions were modeled as occurring daily between 7 a.m. and 7 p.m. and nighttime construction emissions were modeled as occurring between 8 p.m. and 6 a.m.

The most recent five-year set of hourly meteorological data (2001 to 2005) from the Santa Rosa monitoring station that has been prepared by the BAAQMD for use with the ISCST3 model was used in modeling the construction emissions. The monitoring station is about 2.7 miles southwest of the Project site.

Increased cancer risks were calculated using the modeled concentrations and BAAQMD recommended risk assessment methods for infant exposure (third trimester through two years of age), child exposure, and for an adult exposure. The cancer risk calculations were based on applying the BAAQMD recommended age sensitivity factors to the DPM exposures. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer-causing TACs. The

default BAAQMD exposure parameters were used. Infant, child, and adult exposures were assumed to occur at all residences during the entire construction period. Additionally, child exposures were conservatively assumed to occur at the daycare facility on Herbert Street during the entire construction period. It is unknown whether the daycare facility also is a full time residence, but this analysis assumes that it is.

Potential non-cancer health effects due to chronic exposure to DPM were also evaluated. Non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). California's Office of Environmental Health and Hazards (OEHHA) has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals.

3.2.6 Impacts and Mitigation Measures

Table 3.2-4 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.	
AQ-1: Would the Project violate an air quality standard or result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	LS	LS	LS	LS
AQ-2: Would the Project expose sensitive receptors to substantial pollutant concentrations?	LS	LS	LS	LSM
AQ-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to air quality?	LS	LS	LS	LS

Notes: LS = Less than Significant
LSM = Less than Significant with Mitigation

Impact: **AQ-1: Would the Project violate an air quality standard or result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

By its very nature, air pollution is largely a cumulative impact, in that individual projects are rarely sufficient in size to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions (BAAQMD 2011).

<u>Construction</u>

The BAAQMD CEQA Air Quality Guidelines air pollutant thresholds for construction, along with the modeled construction emissions for the Preferred Project and Rail Overcrossing Alternative, are shown below in Table 3.2.5 below. None of the thresholds would be exceeded for either the Preferred Project or the Rail Overcrossing Alternative.

Table 3.2-5 Air Pollutant Emissions (pounds per day)

Project	ROG	NO_x	PM_{10}	$PM_{2.5}$
Preferred Project	1.06	9.32	0.68	0.63
Rail Overcrossing Alternative	1.22	11.64	0.98	0.68
BAAQMD Thresholds	54	54	82	54

Source: Illingworth & Rodkin 2014

In addition to measuring the construction-related emissions against specified thresholds, the BAAQMD recommends that all proposed projects implement "basic construction mitigation measures" whether or not construction-related emissions exceed applicable thresholds. Incorporation of these measures also meets the construction-related threshold for fugitive dust which is to use best management practices during construction of a project. As noted in Chapter 2 Project Description, Project Measure 1 Implement Air Quality Control Measures during Construction, is included as part of the Project. Project Measure 1 includes all of the basic construction mitigation measures recommended by the BAAQMD. The impact to air quality from construction would be less than significant.

Operation

Operation of the Preferred Project and the Rail Overcrossing Alternative would not produce air emissions. There would be no impact to air quality during operation of the Project.

With regard to a potential closure at W. Sixth, W. Seventh, or W. Eighth Streets, such a closure could result in a slight increase of air pollutants related to mobile emissions from longer travel distances. Some cross corridor trips would increase by two blocks, however the potential for increased air pollutants as a result of increased travel distances would be very small and a less-than-significant impact to air quality.

Mitigation: No mitigation is needed.

Impact: AQ-2: Would the Project expose sensitive receptors to substantial pollutant concentrations?

Analysis: Preferred Project – At-grade Rail Crossing (Less than Significant)

Construction

Construction of the Preferred Project would generate dust and equipment exhaust on a temporary basis. The number and types of construction equipment and diesel vehicles, along with the anticipated length of their use for different phases of construction were based on site-specific construction activity schedules for the Preferred Project. Construction of the Preferred Project is expected to occur over an approximate five-week period during summer 2016. Eight nighttime work periods are anticipated for the Preferred Project

The total annual $PM_{2.5}$ exhaust emissions were calculated as 0.0078 ton (15.6 pounds). Fugitive $PM_{2.5}$ dust emissions were calculated as 0.02 pound for the overall construction period (detailed Project emission calculations and construction schedule are included in Appendix C, Construction Community Risk Assessment). The dispersion modeling showed the maximum-modeled DPM and $PM_{2.5}$ concentrations from construction of the Preferred Project occurred at the daycare facility on Herbert Street.

Results of the assessment conservatively estimate that Preferred Project construction emissions would result in a maximum increased residential child cancer risk of 5.9 in one million and maximum increased residential adult cancer risk of 0.3 in one million. The increased cancer risk for a child exposure at the daycare facility would be 1.5 in one million. These increased cancer risks would be lower than the BAAQMD significance threshold of an increased cancer risk of 10 in one million or greater and therefore would be a less-than-significant impact.

The maximum annual $PM_{2.5}$ concentration would be 0.08 g/m^3). This $PM_{2.5}$ concentration is lower than the BAAQMD significance threshold of 0.3 g/m^3 used to judge the significance of health impacts from $PM_{2.5}$. This would be a less-than-significant impact.

The maximum computed hazard indexes based on the DPM concentrations are 0.013 for residential exposure and 0.012 for the daycare facility. These hazard

indexes are much lower than the BAAQMD significance criterion of a hazard index greater than 1.0. This impact would be a less than significant impact.

<u>Operation</u>

Operation of the Preferred Project is not expected to cause any localized emissions that could expose sensitive receptors to unhealthy air pollutant levels. The only operational equipment included in the Project, such as gates, lights, and signals, would be electric. Because operation of the Project would not have any localized emissions, there would be no impact to sensitive receptors.

Mitigation: No mitigation is needed.

Analysis: *Rail Overcrossing Alternative (Significant)*

<u>Construction</u>

Construction of the Rail Overcrossing Alternative would generate dust and equipment exhaust on a temporary basis. The number and types of construction equipment and diesel vehicles, along with the anticipated length of their use for different phases of construction were based on site-specific construction activity schedules for the Rail Overcrossing Alternative. Construction of the Rail Overcrossing Alternative is expected to occur over an approximate six-month period during 2016. A total of 53 nighttime work periods are anticipated for the Rail Overcrossing Alternative.

The total annual $PM_{2.5}$ exhaust emissions were calculated as 0.0524 ton (105 pounds). Fugitive $PM_{2.5}$ dust emissions were calculated as 0.5 pound for the overall construction period (detailed project emission calculations and construction schedule are included in Appendix C, Construction Community Risk Assessment). The dispersion modeling showed the maximum-modeled DPM and $PM_{2.5}$ concentrations from construction of the Rail Overcrossing Alternative occurred at the daycare facility on Herbert Street.

Results of the assessment conservatively estimate that Rail Overcrossing Alternative construction emissions would result in a maximum increased residential child cancer risk of 28.4 in one million and maximum increased residential adult cancer risk of 1.5 in one million. The increased cancer risk for a child exposure at the daycare facility would be 8.4 in one million. The increased residential child cancer risk would be greater than the BAAQMD significance threshold of an increased cancer risk of 10 in one million or greater and therefore would be a significant impact.

The maximum annual $PM_{2.5}$ concentration would be 0.33 (g/m^3). This $PM_{2.5}$ concentration is greater than the BAAQMD significance threshold of 0.3 g/m^3 used to judge the significance of health impacts from $PM_{2.5}$. This would be a significant impact.

The maximum computed hazard indexes based on the DPM concentrations were 0.065 for residential exposure and 0.064 for the daycare facility. These hazard indexes are much lower than the BAAQMD significance criterion of a hazard index greater than 1.0. This impact would be a less-than-significant impact.

Operation

Operation of the Rail Overcrossing Alternative is not expected to cause any localized emissions that could expose sensitive receptors to unhealthy air pollutant levels. The only operational equipment included in the rail overcrossing, such as lights, would be electric. Because operation of the Rail Overcrossing Alternative would not have any localized emissions, there would be no impact to sensitive receptors.

Mitigation: **Mitigation Measure AQ-1: Minimize Construction Equipment Emissions *(Rail Overcrossing Alternative)***

The City shall implement the following equipment standards during construction of the Rail Overcrossing Alternative:

1. All diesel-powered off-road equipment larger than 50 horsepower and operating at the site for more than two days continuously shall meet U.S. EPA particulate matter emissions standards for Tier 2 engines or equivalent.
2. All diesel-powered aerial lifts, forklifts, generator sets, and light plants shall meet U.S. EPA particulate matter emissions standards for Tier 4 engines or equivalent; or the construction contractor shall use other measures to reduce construction period diesel particulate matter emissions to reduce the predicted cancer risk below the threshold. Such measures may include the use of line power instead of generators, alternative fuels (e.g., LPG, biofuels), added exhaust devices, or a combination of measures, provided that these measures are demonstrated to provide the necessary DPM and $PM_{2.5}$ emission reductions to meet the cancer risk thresholds and are approved by the City. Calculations of DPM and PM2.5 emissions shall be performed according to methods set forth by the BAAQMD Guidelines for Community Risk Assessments.

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

Implementation of Mitigation Measure AQ-1 would reduce on-site diesel exhaust emissions used for nighttime operation by approximately 83 percent and by about 62 percent for equipment used during the day time. Implementation of Project Measure 1, which are the Best Management Practices recommended by BAAQMD, is considered to reduce exhaust emissions by an additional 5 percent. Emissions associated with implementation of Mitigation Measure AQ-1 were modeled using CalEEMod. Modeled mitigated emissions were then input back into the dispersion model to predict concentration of DPM and annual $PM_{2.5}$. The computed maximum increased child cancer risk with implementation of mitigation measures would be 8.2 in one million and the maximum $PM_{2.5}$ concentration would be 0.09 g/m^3. For the daycare facility, the maximum child cancer risk would be 1.7 in one million and the maximum $PM_{2.5}$ concentration would be 0.06 g/m^3. The increased child cancer risks would be reduced to below 10 in a million and annual $PM_{2.5}$ concentrations would be reduced to below 0.3 µg/m3. As a result, Mitigation Measure AQ-1 would reduce the potential community risk impact from construction of the Rail Overcrossing Alternative to a less-than-significant level.

3.2.7 Cumulative Impacts

Impact: **AQ-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to air quality?**

There are no cumulative projects from Table 3-1 that are applicable to the cumulative analysis of air quality. When modeling cumulative TACs, in general, only projects within 1,000 feet of the maximally exposed individual (MEI) are included. Only one project, Range Ranch, is within 1,000 feet. However, it is currently under construction and is expected to be complete prior to construction of the Project.

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

Air Pollutants

The Project's contribution to the cumulative impact of air pollutants is discussed above under AQ-1, because air pollutant concentrations are compared to thresholds which take cumulative projects into account. The Project would not cause a significant cumulative impact.

Toxic Air Contaminants (TAC)

For cumulative community risk impacts, the *BAAQMD CEQA Air Quality Guidelines* recommend that lead agencies consider sources of TAC emissions located within 1,000 feet of the Maximum Exposed Individual (MEI). The MEI is the daycare facility on Herbert Street. There are no stationary sources of TAC emissions within 1,000 feet of the MEI that could cumulatively affect the MEI.

Busy roadways are a source of TAC emissions that could affect sensitive receptors. The BAAQMD provides screening tables that indicate predicted community risk impacts posed by such roadways. Jennings Avenue in the vicinity of the Project site has less than 10,000 average daily traffic trips (ADT), which is below the BAAQMD screening level.

There are no nearby planned or approved construction projects within 1,000 feet of the MEI that would be expected to result in a cumulative construction health risk impact.

The project MEI is located about 80 feet from the rail corridor. The future Sonoma-Marin Area Rail Transit (SMART) trains would use this rail line and would be modern diesel-powered trains, which are expected to have relatively low emissions. The *SMART Supplemental Environmental Impact Report* predicted excess cancer risk of 7 per million or less at 30 feet from tracks, including SMART trains and freight service. $PM_{2.5}$ concentrations were not quantified, but were predicted to be very low and were found to be less than significant (SMART 2006, 2008).

As shown in Table 3.2.6, the cumulative cancer risk, annual $PM_{2.5}$ concentration, and hazard index associated with construction of the Preferred Project or the Rail Overcrossing Alternative and exposure from other nearby sources (SMART

trains) are below the significance thresholds. Neither the Preferred Project nor the Rail Overcrossing Alternative would result in a significant cumulative impact.

Table 3.2-6 Cumulative Risk

Source	MEI Distance (feet)	Cancer Risk (per million)	$PM_{2.5}$ Concentration ($\mu g/m^3$)	Acute or Chronic Hazard (HI)
Preferred Project Construction	75	5.9	0.08	0.01
Mitigated Rail Overcrossing Alternative Construction	75	8.2	0.09	0.02
SMART and freight service	80	<7.0	--	--
Cumulative Preferred Project		<12.9	0.08	0.01
Cumulative Rail Overcrossing Alternative (Mitigated Construction)		<15.2	0.09	0.02
BAAQMD Thresholds		*100*	*0.8*	*10.0*
Exceed Threshold?		No	No	No

Note: $\mu g/m^3$ = micrograms per cubic meter
HI = hazard index
BAAQMD = Bay Area Air Quality Management District
MEI = maximally exposed individual.

Mitigation: No mitigation is needed.

3.2.8 References

Air Resources Board (ARB). 2014. *Historic Air Pollutant Data*. Website Accessed at: http://www.arb.ca.gov/adam/

Bay Area Air Quality Management District (BAAQMD). 2010. *Bay Area 20120 Clean Air Plan*. September.

BAAQMD. 2011. *BAAQMD CEQA Air Quality Guidelines*. May.

BAAQMD. 2014. *Air Quality Standards and Attainment Status*. Website Accessed at: http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm.

Illingworth & Rodkin. 2014. *Jennings Avenue Pedestrian and Bicycle Rail Crossing Project Construction Community Risk Assessment*. August 5.

Sonoma-Marin Area Rail Transit District (SMART). 2006. *Environmental Impact Report for the Sonoma-Marin Area Rail Transit Project*. June.

SMART. 2008. *Draft Supplemental Environmental Impact Report for the Sonoma-Marin Area Rail Transit Project, Revised Cumulative Impacts*. July.

3.3 Biological Resources

This section describes the biological resources present in the vicinity of the Project and evaluates the potential effects of construction and operation of the Project on biological resources. The discussion focuses on information pertaining to special-status wildlife and plant species and other protected biological resources (e.g., trees, wetlands, habitats). The impacts and mitigation measures section establishes the thresholds of significance, evaluates potential biological impacts, and identifies the significance of impacts. Mitigation measures are identified where applicable.

3.3.1 Impacts Evaluated in Other Sections

The following subjects are related to biological resources, but are evaluated in other sections of this document:

- Potential impacts to water quality are addressed in Section 3.8, Hydrology and Water Quality.

3.3.2 Setting

Definitions

Special-status biological resources include special-status plants, animals, and natural communities, plus wetlands and other waters of the United States and State, as defined by the U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and the State Water Resources Control Board (SWRCB).

A special-status natural community is a natural habitat community that receives regulatory recognition from municipal, county, State, and/or federal entities, such as the CDFW's California Natural Diversity Database (CNDDB), because it is unique in its constituent components, restricted in distribution, supported by distinctive soil conditions, and/or considered locally rare.

Special-status plant and animal species are defined as:

- Species listed under the federal Endangered Species Act (FESA), Marine Mammal Protection Act, California Endangered Species Act (CESA), California Fish and Game Code (CFGC), and the California Native Plant Protection Act (NPPA) as endangered, threatened, or depleted; species that are candidates or proposed for listing; or species that are designated as rare or fully protected.
- Locally rare species, which may include species that are designated as sensitive, declining, rare, locally endemic, or as having limited or restricted distribution by various federal, State, and local agencies, organizations, and watch lists. This includes species on Lists 1B and 2 of the California Native Plant Society (CNPS).
- Migratory birds protected by the Migratory Bird Treaty Act (MBTA) and the Migratory Bird Treaty Reform Act of 2004 (MBTRA) (Pub. L. No. 108-447, 118 Stat. 2809, 3071–72),

Project area refers to the area that would experience Project-related temporary or permanent effects caused by surface disturbance, tree removal, or other alterations of habitat within the Project construction area.

Study area refers to the larger area within which biological resources could be subject to effects. The study area for the Project is the rail crossing site at Jennings Avenue, the potential closure sites at W. Sixth, W. Seventh, and W. Eighth Street, and the nearby areas surrounding these sites.

The study area includes areas that would experience Project-related temporary or permanent effects caused by surface disturbance, tree removal, or other alterations of habitat within the construction area. The study area also includes lands surrounding the Project with biological resources that could be subject to the Project's effects (e.g., disturbance to wildlife from construction noise). Typically, the study area in relation to biological resources encompasses habitats adjacent to the work zone which could support wildlife species whose life cycles may be substantially disrupted by construction activities or Project operations.

Plant Communities

The botanical nomenclature and plant community descriptions used below conform to Baldwin, et al. for plants and to Sawyer, et al. for plant communities (WRA and Valerius 2014). Three plant communities occur at the Jennings Avenue Project area: 1) valley oak riparian; 2) freshwater marsh wetland; and 3) ruderal (weedy) vegetation. At the W. Sixth, W. Seventh, and W. Eighth Street Project areas, there is a general lack of vegetation except for landscape street trees and some ruderal (weedy) species. Descriptions of these plant communities are included below.

Valley Oak Riparian

Valley oak riparian occurs within and adjacent to the Jennings Avenue Project area along Steele Creek. The valley oak *(Quercus lobata)* trees occur primarily along the western bank of Steele Creek with the eastern bank having fewer trees. Other native tree species observed in this vegetation community include young coast live oak (*Quercus agrifolia*), big leaf maple (*Acer macrophyllum*) and white alder (*Alnus rhombifolia*). White alder occurs on the creek bank closer to the bed of the channel and not on the top of bank. Non-native tree and shrub species present include fruit trees (*Prunus spp.*), privet (*Ligustrum sp.*), firethorn (*Pyracantha sp.*) and Himalayan blackberry (*Rubus armeniacus*).

The valley oak riparian community along Steele Creek, although comprised of native valley oak trees, is not a truly native valley oak woodland alliance type as described Sawyer et al. (2009), because the trees are not in a woodland/savannah type setting associated with the alliance description. Therefore, it is described as valley oak riparian rather than valley oak woodland.

Freshwater Marsh Wetland

The freshwater marsh community is associated with the wetland vegetation that occurs within the Steele Creek channel in the Jennings Avenue Project area. Wetland plants noted include umbrella sedge (*Cyperus eragrostis*) and cattails (*Typha spp.*). Himalayan blackberry (*Rubus armeniacus*) also occurs along the banks. Steele Creek contained standing water at the time of a site visit on December 5, 2013; however, the stream flows mainly in response to rainfall and does not have year-round water flow.

Ruderal Vegetation

Ruderal plant communities are assemblages of plants that thrive in waste areas, roadsides and similar disturbed sites in towns and cities and along rural roadways (WRA and Valerius 2014). Ruderal habitats typically have compacted, graveled, or other hard-pan surfaces that prevent vegetation from emerging. Vegetation that may grow sparsely in ruderal areas is typically non-native and similar to the species described in annual grasslands. Ruderal vegetation at both the Jennings Avenue Project area and the W. Sixth, W. Seventh, and W. Eighth Streets Project areas consists of non-native grasses and forbs. Species noted in the area include non-native grasses such as wild oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordaceus*) and wild rye (*Festuca perennis*). Non-native forb species include chicory (*Cichorium*

intybus), Queen Anne's lace (*Daucus carota*), asthmaweed (*Erigeron bonariensis*), fennel (*Foeniculum vulgare*), and bull mallow (*Malva nicaaensis*).

Landscaped Vegetation

Landscaped vegetation at the W. Sixth, W. Seventh, and W. Eighth Street Project areas consists of non-native street trees. At W. Sixth Street, there are crape myrtle (*Lagerstroemia sp.*) trees on the northwest side of the rail corridor, Chinese pistache (*Pistacia chinensis*) on the northeast side, coast redwoods (*Sequoia sempervirens*) and pampas grass (*Cortaderia jubata*) on the southeast side and ruderal vegetation on the southwest side. The Chinese pistache and coast redwoods are located behind existing fences and the crape myrtle are located along W. Sixth Street. At W. Seventh Street, there are flowering pear (*Pyrus calleryana*) trees along the street on the northwest side of the rail corridor, with Chinese holly (*Ilex cornuta*) on the southeast corner, and no vegetation to the northeast or southwest. At W. Eighth Street, there are Italian cypress (*Cupressus sempervirens*) trees on the northwest side of the rail corridor, a Chinese pistache tree on the northeast side, and no vegetation on the southeast and southwest sides.

Wildlife Habitats

The wildlife habitat quality of an area is determined by the type, size, and diversity of vegetation communities present and their degree of disturbance. Wildlife habitats are typically distinguished by vegetation type, with varying combinations of plant species providing different resources for use by wildlife. The following is a discussion of the wildlife species supported by the on-site habitats, as described by *A Guide to Wildlife Habitats of California* (WRA and Valerius 2014).

Valley Foothill Riparian

Valley foothill riparian wildlife habitat is located within the Jennings Avenue Project area along Steele Creek. The habitat is comprised primarily of valley live oak trees, with a ruderal shrub story. The tree canopy is approximately 40 feet in width. Species observed within this habitat at the time of field visits include western scrub jay (*Aphelocoma californica*), California towhee (*Melozone crissalis*), and American robin (*Turdus migratorius*), among others. The vegetation present on the site provides potential nesting habitat for these and other passerines (perching birds). Signs of other animals include raccoon (*Procyon lotor*). An old telephone pole was being used as an acorn grainery by acorn woodpeckers (*Melanerpes formicivorus*) and hairy woodpeckers (*Picoides villosus*).

The riparian area may also provide food and cover for several bat species, such as Western red-bat (*Lasiurus blossevillii*) and pallid bat (*Antrozous pallidus*), both of which are California Species of Special Concern (SSC), as well as the hoary bat (*Lasiurus cinereus*). Solitary-roosting bats consist either of single males or females either alone or with young. Colonial-roosting bats form maternity colonies in tree cavities or crevices, whereas with man-made structures, young are left behind while females forage, then return to nurse their young. Greater impacts can occur as a result of removal of trees that support cavity-roosting bat species than those that provide habitat for solitary foliage-roosting species.

Freshwater Marsh Wetland

Steele Creek in the Jennings Avenue Project area also provides aquatic habitat. It is unlikely that amphibians use this habitat based on the urbanization of the habitat, the lack of perennial water in the creek and lack of ponds in the vicinity of the creek. A Sonoma County Water Agency aqueduct that crosses the creek at Guerneville Road presents a barrier to migrating fish within the Jennings Avenue Project area (Santa Rosa 2013a).

Urban

Urban vegetation occurs within the W. Sixth, W. Seventh, and W. Eighth Streets Project areas. Urban habitats are dominated by generalist scavenger wildlife species such as raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), American crow (*Corvus brachyrhynchos*), and various rodents. Scavenger species prey upon a variety of wildlife thus decreasing the likelihood that special-status wildlife species would be found in urban areas.

Wetlands and Waters

Wetlands are defined as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands falling under USACE jurisdiction must demonstrate the presence of three specific wetland parameters: hydric soils, hydrophytic vegetation, and sufficient wetland hydrology. Generally, wetlands include swamps, marshes, bogs, and similar areas. Lakes, rivers, and streams are defined as "other waters." Jurisdictional limits of these features are typically noted by the ordinary high-water mark (OHWM). The OHWM is the line on the shore or bank that is established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank, shelving, changes in soils, lack of woody or terrestrial vegetation, the presence of litter or debris, or other characteristics of the surrounding areas.

The Jennings Avenue Project site is located within the Piner Creek watershed, and Steele Creek is located within the Jennings Avenue Project area on the east side of the rail corridor between the tracks and Jennings Avenue. The headwaters of Steele Creek are located near the Santa Rosa Junior College campus on the east side of Highway 101. After flowing through culverts under Highway 101, the creek surfaces near Frances Street, then flows northwest adjacent to the rail corridor to Guerneville Road, then west to Piner Creek (Santa Rosa 2013b). Steele Creek is approximately five feet deep and five to six feet wide at the OHWM within the Jennings Avenue Project area.

Pedestrians and bicyclists in the Jennings Avenue Project area currently cross the waterway at a storm drain box culvert in the creek. Steele Creek is rock rip-rapped along the banks upstream of the box culvert, approximately 30 feet and downstream approximately 10 feet. Steele Creek supports a freshwater marsh community with wetland vegetation that occurs within the channel. As described above, wetland plants noted include umbrella sedge (*Cyperus eragrostis*) and cattails (*Typha spp.*).

A roadside drainage swale is located along the north side of Jennings Avenue west of the rail corridor. This roadside drainage empties into a culvert at the intersection of Jennings Avenue and North Dutton Avenue. The drainage has no wetland vegetation and no ordinary high water mark and was originally constructed in an upland area to divert water from the roadway to the storm drain system. The channel is not considered a jurisdictional wetland or waters of the U.S/State.

No wetlands or other waters are located in the W. Sixth, W. Seventh, or W. Eighth Street Project area.

Special-status Plant Species

Based on a review of special-status plant species in the Santa Rosa topographic quadrangle, the potential for occurrence of 22 special-status plant species within the Jennings Project areas was evaluated; however, no special-status plant species are expected to be in the Jennings Project areas because no plants were located during field surveys completed at the appropriate bloom

period. No habitat for special-status plant species occurs at any of the three potential crossing closure sites. A summary of the formal status, habitat affinities, blooming periods, and potential for occurrence within the Jennings Avenue Project area for each of the 22 plant species is presented in Appendix D (Special Status Species Tables). The W. Sixth, W. Seventh, and W. Eighth Project sites lack vegetation, and therefore do not support habitat.

Special-status Animal Species

Based on a review of the CNDDB, the potential for occurrence of 14 special-status animal species in the study area was evaluated (WRA and Valerius 2014). A summary of the formal status, habitat affinities, reported localities close to Project areas, and potential for occurrence within the Project area for each of the 14 animal species is presented in Appendix D (Special Status Species Tables). Of the 14 species, three have suitable habitat within the Jennings Avenue Project area. The white-tailed kite, a fully protected species under the CFGC, may occur in the Project area. The Western red bat and the hoary bat may utilize habitat in the Jennings Avenue Project area.

White-tailed Kite

White-tailed kite is listed by the CDFW as a fully protected bird species and is protected under the MBTA and the CFGC. In the U.S., white-tailed kites occur in California, Texas, Washington, and Oregon, with a separated group in Florida (WRA, Valerius 2014). Generally, white-tailed kites are observed in low elevation grasslands, agricultural, wetland, oak-woodland, or savannah habitats. The majority of their diet is made up of small mammals. This species nests in a wide variety of trees and, in some cases, shrubs. Nests usually consist of platforms of small sticks, leaves, weed stalks, and similar materials lined with grass, hay, or leaves. This species nests from February through August, with a peak in breeding occurring from late March through July. White-tailed kites were not observed during the field evaluations; however, they could utilize habitat in the area.

Western red bat

Western red bat (*Lasiurus blossevillii*) (a California Species of Special Concern) roosts in foliage of large shrubs and trees in woodland borders, rivers, agricultural areas, and urban areas with mature trees. They are typically found in large cottonwoods, sycamores, walnuts and willows associated with riparian habitats. Western red bats are solitary when roosting, except when females are with young (from 2 to 5 are born). They forage over mature orchards, oak woodland, low elevation conifer forests, riparian corridors, non-native trees in urban and rural residential areas, and around strong lighting. Western red bats were not observed during the field visits; however, the mature trees in the Jennings Avenue Project area provide suitable roosting habitat for the species.

Nesting Passerines and Raptors

Passerines (perching birds) and raptors (birds of prey) are protected under the federal Migratory Bird Treaty Act and Fish and Wildlife Code 3503. As early as February, passerines begin courtship and once paired, they begin nest building, often around the beginning of March. Depending on environmental conditions, young passerines may fledge from the nest as early as May and, if the prey base is large, the adults may lay a second clutch of eggs. In general, the breeding season for raptors occurs in late March through June, depending on the climate, with young fledging by early August. Passerines observed at the Jennings Avenue site during field visits included Nuttall's woodpecker (*Picoides nuttallii*), California towhee (*Pipilo crissalis*), northern flicker (*Colaptes auratus*), and others. Raptors were not observed during the field visits. Both passerines and raptors have potential to nest in trees present at the Jennings Avenue Project area and at the W. Sixth, W. Seventh, and W. Eighth Street Project areas.

Wildlife Movement Corridors

Wildlife corridors are important for persistence of wildlife populations over time. A wildlife movement corridor is a linear habitat that naturally connects and provides passage between two or more large habitats or habitat fragments. These corridors are used by wildlife to find suitable forage, nesting and resting sites, mates, and new home ranges. In addition, wildlife corridors are used for dispersal for breeding populations, which will decrease the likelihood that subpopulations will go extinct or become locally extirpated. Wildlife movement includes migration (i.e., usually one direction per season), inter-population movement (i.e., long-term genetic exchange), and small travel pathways (i.e., daily movement within an animal's home range). While small travel pathways usually facilitate movement for daily home range activities such as foraging or escape from predators, they also provide connection between outlying populations and the main corridor, permitting an increase in gene flow among populations.

Wildlife connectivity of the Jennings Avenue Project area to other open lands is minimal. The riparian corridor in the Jennings Avenue Project area is likely a foraging corridor for birds. Mammals inured to human habitation, such as Virginia opossum and raccoon, likely use Steele Creek as a movement corridor. However, based on the urbanization of the site and its surrounding areas, there is no suitable movement corridor habitat for special-status species. Similarly, based on the urbanization of the W. Sixth, W. Seventh, and W. Eighth Street Project areas, no suitable movement corridor habitat is present.

Trees Subject to the Santa Rosa Tree Ordinance

The Santa Rosa Tree Ordinance identifies both protected and heritage trees. Protected status applies to specific trees that have been granted protection. No protected trees are in or near the Project areas. Heritage status applies to sizes and species of trees identified in the Tree Ordinance. Heritage trees in or near the Project areas are identified in Impact BIO-5 below.

3.3.3 Regulatory Framework

Federal

Federal Endangered Species Act

The FESA of 1973 recognizes that many species of fish, wildlife, and plants are in danger of or threatened with extinction and established a national policy that all federal agencies should work toward conservation of these species. The Secretary of the Interior and the Secretary of Commerce are designated in the Act as responsible for identifying endangered and threatened species and their critical habitats, carrying out programs for the conservation of these species, and rendering opinions regarding the impact of proposed federal actions on endangered species. The Act also outlines what constitutes unlawful taking, importation, sale, and possession of endangered species and specifies civil and criminal penalties for unlawful activities.

Clean Water Act, Section 404

Proposed discharges of dredged or fill material into waters of the U.S. require USACE authorization under Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344). Waters of the U.S. generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands (with the exception of isolated wetlands).

According to the Corps of Engineers Federal Wetlands Delineation Manual, except in certain situations, all three parameters must be satisfied for an area to be considered a jurisdictional wetland. The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid

West Region (USACE 2008) is utilized when conducting jurisdictional wetland determinations in areas identified within the boundaries of the arid west.

A project proponent must demonstrate actions taken to minimize potential adverse impacts of the discharge on the above elements. Compensatory mitigation for unavoidable impacts may be required to ensure that an activity requiring a Section 404 permit results in no net loss of wetlands.

Clean Water Act, Section 401

Section 401 of the CWA requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards. The appropriate Regional Water Quality Control Board (RWQCB) regulates Section 401 requirements (see under State).

Migratory Bird Treaty Act

The MBTA of 1918 (50 CFR 10.13) established federal responsibilities for the protection of nearly all species of birds, their eggs and nests. A migratory bird is defined as any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle. "Take" is defined in the MBTA "to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof." Only non-native species such as feral pigeon (*Columba livia*), house sparrow (*Passer domesticus*), and European starling (*Sturnus vulgaris*) are exempt from protection.

State

California Environmental Quality Act

Rare or endangered plant or wildlife species are defined in the CEQA Guidelines Section 15380. Endangered means that survival and reproduction in the wild are in immediate jeopardy. Rare means that a species is either presently threatened with extinction or that it is likely to become endangered within the foreseeable future. A species of animal or plant shall be presumed to be rare or endangered if it is listed in Sections 670.2 or 670.5, Title 14, California Administrative Code; or Title 50, Code of Federal Regulations Sections 17.11 or 17.12 pursuant to the federal Endangered Species Act as rare, threatened, or endangered.

California Endangered Species Act

The CESA includes provisions for the protection and management of species listed by the State of California as endangered or threatened or designated as candidates for such listing (Fish and Game Code Sections 2050 through 2085). The CESA requires consultation "to ensure that any action authorized by a State lead agency is not likely to jeopardize the continued existence of any endangered or threatened species or results in the destruction or adverse modification of habitat essential to the continued existence of the species" (Section 2053). California plants and animals declared to be endangered, threatened, or rare are listed at 14 California Code of Regulations (CCR) 670.2 and 14 CCR 670.5, respectively. The State prohibits the take of protected amphibians (14 CCR 41), protected reptiles (14 CCR 42), and protected furbearers (14 CCR 460). The CDFW may also authorize public agencies through permits or a memorandum of understanding to import, export, take, or possess any endangered species, threatened species, or candidate species for scientific, educational, or management purposes (Section 2081[a]). The CDFW may also authorize, by permit, the take of endangered species, threatened species, and candidate species provided specific conditions are met (Section 2081[b]).

California Fish and Game Code

The CDFW enforces the CFGC, which provides protection for “fully protected birds” (Section 3511), “fully protected mammals” (Section 4700), “fully protected reptiles and amphibians” (Section 5050), and “fully protected fish” (Section 5515). With the exception of permitted scientific research, no take of any fully protected species is allowed. The white-tailed kite is the only fully protected species potentially occurring in the study area.

Section 3503 of the CFGC prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Subsection 3503.5 specifically prohibits the take, possession, or destruction of any birds in the orders *Falconiformes* (hawks and eagles) or *Strigiformes* (owls) and their nests. These provisions, along with the federal MBTA, essentially serve to protect nesting native birds. Non-native species, including European starling and house sparrow, are not afforded any protection under the MBTA or CFGC.

Streams, lakes, and riparian vegetation which serve as habitat for fish and other wildlife species are subject to jurisdiction by the CDFW under Sections 1600-1616 of the California Fish and Game Code. Any activity that will do one or more of the following: 1) substantially obstruct or divert the natural flow of a river, stream, or lake; 2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or 3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake; generally require a 1602 Lake and Streambed Alteration Agreement. The term “stream,” which includes creeks and rivers, is defined in the CCR as follows: “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. Riparian is defined as, “on, or pertaining to, the banks of a stream;” therefore, riparian vegetation is defined as, “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself.” Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from the CDFW.

Clean Water Act and the State of California’s Porter-Cologne Water Quality Control Act

The State Water Resources Control Board (SWRCB) regulates construction storm water discharges through SWRCB Order No. 2003-0017-DWQ, “General Waste Discharge Requirements for Dredge and Fill Discharges that Have Received State Water Quality Certification”. The State’s authority to regulate activities in wetlands and waters at the project sites resides primarily with the SWRCB, which in turn has authorized the State’s nine regional RWQCBs, discussed below, to regulate such activities.

Under Section 401 of the federal CWA, every applicant for a federal permit for any activity that may result in a discharge to a water body must obtain State Water Quality Certification that the proposed activity will comply with state water quality standards.

In the study area, the North Coast RWQCB regulates construction in waters of the U.S. and waters of the State, including activities in wetlands, under both the CWA and the State of California’s Porter-Cologne Water Quality Control Act (California Water Code, Division 7). Under the CWA, the RWQCB has regulatory authority over actions in waters of the U.S., through the issuance of water quality certifications, as required by Section 401 of the CWA, which are issued in conjunction with permits issued by the USACE under Section 404 of the CWA. The RWQCB must certify that a

USACE permit action meets State water quality objectives (§401 CWA, and Title 23 CCR 3830, et seq.) before a USACE permit is issued. Activities in areas that are outside of the jurisdiction of the USACE (e.g., isolated wetlands, vernal pool, or stream banks above the ordinary high water mark) are regulated by the nine RWQCBs, under the authority of the Porter-Cologne Act, and may require the issuance of either individual or general waste discharge requirements.

The California Wetlands Conservation Policy (Executive Order W-59-93) establishes a primary objective to "ensure no overall net loss … of wetlands acreage and values in California." The RWQCBs implement this policy and the Basin Plan Wetland Fill Policy, both of which require mitigation for wetland impacts.

State Species of Special Concern

The CDFW maintains an informal list of species of special concern. These are broadly defined as species that are of concern to the CDFW because of population declines and restricted distributions, and/or they are associated with habitats that are declining in California; the criteria used to define special-status species are described by the CDFW. Impacts to special-status plants and animals may be considered significant under CEQA.

Native Plant Protection Act

The CDFW administers the California Native Plant Protection Act (CNPPA) (Sections 1900–1913 of the CFGC). These sections allow the California Fish and Game Commission to designate rare and endangered rare plant species and to notify landowners of the presence of such species. Section 1907 of the CFGC allows the Commission to regulate the "taking, possession, propagation, transportation, exportation, importation, or sale of any endangered or rare native plants." Section 1908 further directs that "…[n]o person shall import into this state, or take, possess, or sell within this state, except as incident to the possession or sale of the real property on which the plant is growing, any native plant, or any part or product thereof, that the Commission determines to be an endangered native plant or rare native plant."

California Species Preservation Act

The California Species Preservation Act (CFGC Sections 900–903) includes provisions for the protection and enhancement of the birds, mammals, fish, amphibians, and reptiles of California. The administering agency is the CDFW.

Regional and Local

Santa Rosa City Code Section 17-24, Trees

In 1990, the City Council of Santa Rosa passed Ordinance 2858, which enacted the following regulations to protect certain trees that are an essential part of the City's natural heritage, called "heritage trees," while at the same time recognizing an individual property owner's freedom in how they treat their land:

- Section 17-14.030 describes the conditions in which a permit is required to remove or alter any tree, including heritage, protected, or street trees.
- Section 17-14.040 describes tree alteration/relocation/removal requirements on properties where no additional development is proposed and permit information requirements.
- Section 17-14.050 describes tree alteration/relocation/removal requirements on properties proposed for development. This section also describes protection measures for heritage trees that must be implemented for all development projects (including fencing during

construction, avoidance of disturbance and trenching within driplines, maintaining grade around trees, and prohibiting the placement of paving or landscaping requiring summer irrigation in the vicinity of oaks), and a tree replacement program for all trees and heritage trees that are removed.

- Section 17-14.070 lists acceptable street tree species and the tree removal permit requirements for removing a street tree(s).

The City of Santa Rosa regulates the removal of large and/or significant trees through the implementation of the City's tree ordinance. The City regulates the removal of heritage trees which are defined as a tree or grove of trees designated by the Planning Commission as having a special significance which requires review before removal is permitted.

The City regulates the removal or alteration of heritage trees in all zoning districts throughout the City. The City's Department of Community Development issues permits for the removal of heritage trees. Removal of heritage trees require replacement of two trees of the same species for each six inches of the diameter of the tree removed. Replacement tree must be a minimum 15-gallon container size and must be planted on the project site. The Director of the Community Development Department can approve payment of in-lieu fees to meet the replacement requirements.

Santa Rosa City Code Section 20-30.040, Creekside Development

Santa Rosa City Code Section 20-30.040, Creekside Development, established the following creek setback requirements for any new development:

- Waterways with a defined bank will have a setback area of 50 feet from the top of the highest bank. When the bank of a waterway is steeper than 2.5:1, the exterior setback boundary shall be measured by the projections of a slope of 2.5:1 from the toe of the stream bank to ground level, plus 50 feet.
- Waterways without a defined bank will have a setback area of 50 feet, measured horizontally, from the established 100-year storm freeboard level. Exceptions are permitted for any defined channel that is owned by the Sonoma County Water Agency, for developments in compliance with setback requirements prior to September 3, 2004, for new developments that are surrounded by existing structures that were developed in compliance with setback requirements prior to September 3, 2004, and for bridges and utilities.

City of Santa Rosa General Plan Goals and Policies

The following are the goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.

OSC-B	**Conserve the city's open spaces and significant natural features.**
OSC-B-3	Require that new subdivisions, multifamily, and non-residential development abutting creek corridors are appropriately designed with respect to the creek. Development may orient toward the creek as an amenity, but adequate setbacks shall be used to ensure riparian habitat is protected.
OSC-D	**Conserve wetlands, vernal pools, wildlife ecosystems, rare plant habitats, and waterways.**
OSC-D-1	Utilize existing regulations and procedures, including Subdivision Guidelines, Zoning, Design Review, and environmental law, to conserve wetlands and rare

plants. Comply with the federal policy of no net loss of wetlands using mitigation measures such as:

- Avoidance of sensitive habitat;
- Clustered development;
- Transfer of development rights; and/or
- Compensatory mitigation, such as restoration or creation.

OSC-D-2 Protect high quality wetlands and vernal pools from development or other activities as determined by the Vernal Pool Ecosystem Preservation Plan.

OSC-D-9 Ensure that construction adjacent to creek channels is sensitive to the natural environment. Ensure that natural topography and vegetation is preserved along the creek, and that construction activities do not disrupt or pollute the waterway.

OSC-D-11 New development along channelized waterways should allow for an ecological buffer zone between the waterway and development. This buffer zone should also provide opportunities for multi-use trails and recreation.

OSC-E Ensure local creeks and riparian corridors are preserved, enhanced, and restored as habitat for fish, birds, mammals and other wildlife.

OSC-H Conserve significant vegetation and trees.

OSC-H-1 Preserve trees and other vegetation, including wildflowers, both as individual specimens and as parts of larger plant communities.

OSC-H-2 Preserve and regenerate native oak trees.

LUL-U Preserve, as permanent open space, areas which contain state or federally listed rare and endangered species.

LUL-U-4 Protect biologically sensitive habitats and incorporate riparian plant materials in the landscape plans for projects.

Santa Rosa Citywide Creek Master Plan Goals and Policies

The following are the goals and policies from the *Santa Rosa Citywide Creek Master Plan 2013* that are applicable to the Project.

HA-1 Preserve healthy and/or environmentally sensitive creek areas.

HA-1-2 Meet or exceed the required creek setback distance to provide ecological buffers, recognize the 100-year floodplain, and allow for stream corridor restoration. Development shall locate outside the creek setback, as defined within the Santa Rosa Zoning Code.

HA-5 Focus preservation, enhancement, and restoration efforts on habitat that supports one or more special-status species, including those species that are state or federally listed as Threatened or Endangered, or as a Species of Special Concern.

HA-5-1 Protect habitat for Endangered Species, through preservation, enhancement, and restoration of riparian corridors and prevention of storm water pollution.

HA-6-2 Consistent with federal, state, and local regulations, impacts to existing habitat will be avoided if possible. Minimization and mitigation of any unavoidable impacts will be required.

3.3.4 Evaluation Criteria and Significance Thresholds

For the purposes of this EIR, the evaluation criteria and significance thresholds summarized in Table 3.3-1 (Evaluation Criteria and Significance Thresholds) are used to determine if the Project would have a significant effect on biological resources.

Table 3.3-1 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
BIO-1: Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Loss or harm of individuals or loss of habitat for listed or candidate species or species of special concern Loss of individuals or eggs protected under the MBTA.	CEQA Guidelines Appendix G, Checklist Item IV (a) FESA Sec. 9 (§ 1538) FESA 50 CFR 17.3 FESA 50 CFR 424.12 MBTA of 1918 50 CFR 10.13 Fish & Game Code 2000; 1900-1930 California Native Plant Protection Act (CDFG Code Sections 1900-1913), CEQA (Article 5, Section 15065)
BIO-2: Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	Removal of a riparian or other sensitive vegetation community	CEQA Guidelines Appendix G, Checklist Item IV (b)(e) CDFW Section 1602 Fish & Game Code 1900-1913
BIO-3: Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	0 acres of fill in wetlands, waters of the U.S., or waters of the State	CEQA Guidelines Appendix G, Checklist Item IV (c) Clean Water Act, 40 CFR 230 404(b)(10) Corps, EPA and State of California 'no-net loss' policies
BIO-4: Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	Creation of a barrier to movement resulting in loss or harm to migratory or local wildlife	CEQA Guidelines Appendix G, Checklist Item IV (d) FESA Sec. 9 (§ 1538) Federal Migratory Bird Treaty Act Fish & Game Code 3303, 3503.5 & 3800

Evaluation Criteria	Significance Threshold	Sources
BIO-5: Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Removal or damage that leads to mortality of any tree protected by the City's Preservation Policy or Tree Ordinance	CEQA Guidelines Appendix G, Checklist Item IV (e) Santa Rosa City Code, Chapters 17-24, Trees Santa Rosa Code Section 17-24.020 – Tree Preservation Ordinance
BIO-6: Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	Conflict with an approved habitat conservation plan	CEQA Guidelines Appendix G, Checklist Item IV (f) Santa Rosa Citywide Creek Master Plan 2013

3.3.5 Methodology

The assessment of potential impacts on biological resources was based on the relationship between the distribution of habitat and the activities proposed for construction and operation of the Project. Potential impacts on special-status plants and wildlife were based on known occurrences or on the likelihood that suitable habitat for special-status species would be affected.

A habitat assessment was prepared for the Project (WRA, Valerius 2014). The habitat assessment identified the potential for special-status species to occur within the Project area, as well as the potential presence of any riparian habitat or other sensitive natural communities, jurisdictional wetlands or waters, or wildlife movement corridors. Field visits were conducted by biologists in December 2013, April 2014, and June 2014 to evaluate on-site and adjacent habitats, and to conduct spring and summer rare plant habitat surveys.

Information on special-status plant and animal species was compiled through a review of the literature and database search. Database searches for known occurrences of special-status species focused on the Santa Rosa U.S. Geologic Service 7.5-minute topographic quadrangle, which provided a five-mile radius around the Project area. The following sources were reviewed to determine which special-status plant and wildlife species have been documented in the vicinity of the Project site:

- U.S. Fish and Wildlife Service (USFWS) quadrangle species lists;
- USFWS list of special-status animals for Sonoma County;
- California Natural Diversity Database records (CNDDB);
- California Department of Fish and Wildlife's (CDFW) Special Animals List;
- State and Federally Listed Endangered and Threatened Animals of California;
- California Native Plant Society (CNPS) Electronic Inventory records; and
- California Department of Fish and Game (CDFG) publication "California's Wildlife, Volumes I-III" (WRA and Valerius 2014).

3.3.6 Impacts and Mitigation Measures

Table 3.3-2 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.	
BIO-1: Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	LSM	LSM	LSM	LSM
BIO-2: Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	LSM	LSM	LSM	LSM
BIO-3: Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	LSM	LSM	LSM	LSM
BIO-4: Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	LS	LS	LS	LS
BIO-5: Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	LSM	LSM	LSM	LSM
BIO-6: Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	LSM	LSM	LSM	LSM
BIO-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to biological resources?	LS	LS	LS	LS

Notes: LS = Less than Significant
LSM = Less than Significant with Mitigation

Impact: **BIO-1: Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Rail Overcrossing Alternative (Significant)

Construction

Special-status Plants

Field surveys were completed during the bloom period to determine if special-status plants were present at the Jennings Avenue Project area. Field survey results indicate that no federally or State-listed or other special-status plant species are present at the Jennings Avenue Project area. No surveys were completed at the W. Sixth, W. Seventh, or W. Eighth Street areas because no suitable habitat occurs there (WRA, Valerius 2014). Therefore, Project construction would not result in impacts on special-status plant species.

Special-status Animals

No animal species listed under FESA or CESA, or which are candidates for either list, are present in the Project area, and none are expected to occur due to a lack of suitable habitat. Therefore, Project construction would not result in impacts on federally listed, State-listed, or candidate wildlife species. (WRA, Valerius 2014)

Three non-listed, special-status animal species may be present in the study area; these animals are identified by the CDFW as special animals, Species of Special Concern, or, in the case of the white-tailed kite, as a fully protected species. Although the potential for their occurrence is considered low, the presence of these special-status species could not be ruled out due to the presence of suitable habitat at or adjacent to the Project area at Jennings Avenue. Migratory birds are also protected under the MBTA and CFGC. Migratory birds and raptors may nest in the area. (WRA, Valerius 2014)

White-tailed Kite, Nesting Passerines and Raptors

Construction activities for both the Preferred Project and the Rail Overcrossing Alternative could remove the nesting and foraging habitat of the white-tailed kite that depends on grassland and riparian habitat through direct removal of habitat, or could result in disruption of breeding and foraging habitat due to construction noise and activities. Project construction could result in the removal of trees at Jennings Avenue that could provide nesting habitat for birds and raptors. Suitable nesting habitat for migratory birds is also present.

The Jennings Avenue Project area has large trees surrounding the construction area. The trees and shrubs could provide nesting habitat for special-status bird species including white-tailed kite and migratory raptors and passerine bird species. Construction activities would result in tree removal which would result in impacts to special-status and migratory bird nests if present in the trees.

Construction activities could also disturb nesting and breeding birds in trees and shrubs near the Project area at Jennings Avenue. Potential impacts on white-tailed kites and migratory birds that could result from Project construction activities include the destruction of eggs or occupied nests, mortality of young, and the abandonment of nests with eggs or young birds prior to fledging. Such potential construction-related impacts on the white-tailed kite and migratory birds would be significant.

Because trees are located near the W. Sixth and W. Seventh Street Project area, nests, if present, could also be affected by Project construction. This potential impact would be significant. There are no trees at the W. Eighth Street Project area; therefore there would be no impacts to white-tailed kite, nesting passerines and raptors.

Special-status Bats

Impacts on the special-status western red bat and hoary bat could result from tree removals or trimming of trees that provide suitable roosting habitat for these bat species or that are occupied by roosting bats. The western red bat and hoary bat could roost in trees on or near the Jennings Avenue Project site. Disturbance during the maternity roosting season could potentially result in roost abandonment and mortality of young. For instance, bats could abandon their young if impacts were to occur during seasonal periods of breeding activity (about February 15 through April 15 and August 15 through October 30). Therefore, Project construction could result in both permanent and temporary loss of suitable or occupied habitat for, as well as mortality, of special-status bat species, which would be a significant impact.

No suitable bat roosting habitat occurs at the W. Sixth, W. Seventh, or W. Eighth Street Project areas, and no trees would be removed or trimmed. No impact to special-status species would occur at these locations.

Operation

No ground disturbance would occur and no trees would be removed during operation of the Preferred Project or the Rail Overcrossing Alternative; therefore, there would be no operational impact to special-status species, migratory birds or raptors.

Mitigation: **Mitigation Measure BIO-1: Protection Measures during Construction for Special-status Birds *(Preferred Project and Rail Overcrossing Alternative)***

The City of Santa Rosa shall conduct tree removal during the non-breeding season (generally August 16 through February 14) for special-status birds (including migratory birds and raptors), to the extent feasible.

If construction activities must occur during the breeding season for special-status birds (February 15 to August 15), the City shall retain a qualified wildlife biologist who is experienced in identifying birds and their habitat to conduct a pre-construction survey for nesting special-status birds and migratory passerines and raptors. The preconstruction surveys must be conducted within 15 days prior to the initiation of tree removal, grading, grubbing, or other construction activities scheduled during the breeding season (February 15 to August 15). If the

biologist detects no active nesting or breeding activity by special-status or migratory birds or raptors, then work may proceed without restrictions. To the extent allowed by access, all active passerine nests identified within 100 feet and all active raptor nests identified within 250 feet of the limits of work shall be mapped.

If migratory bird and/or active raptor nests are identified within 250 feet of a facility site or if an active passerine nest is identified within 100 feet of a facility site, a qualified biologist shall determine whether or not construction activities might impact the active nest or disrupt reproductive behavior. If it is determined that construction would not affect an active nest or disrupt breeding behavior, construction may proceed without any restriction.

If the qualified biologist determines that construction activities would likely disrupt raptor breeding or passerine nesting activities, then the City shall establish a no-disturbance buffer around the nesting location to avoid disturbance or destruction of the nest site until after the breeding season or after a wildlife biologist determines that the young have fledged (usually late June through mid-July). The extent of these buffers would be determined by a wildlife biologist in consultation with CDFW and would depend on the species' sensitivity to disturbance (which can vary among species); the level of noise or construction disturbance; line of sight between the nest and the disturbance; ambient levels of noise and other disturbances; and consideration of other topographical or artificial barriers. The wildlife biologist shall analyze and use these factors to assist the CDFW in making an appropriate decision on buffer distances.

Buffers shall be clearly delineated on the ground with easily seen construction exclusion fencing and no machinery or workers shall enter the area. After the fencing is in place, there would be no restrictions on grading or construction activities outside the buffer areas.

Mitigation Measure BIO-2: Protection Measures for Special-status Bats during Tree Removal or Trimming *(Preferred Project and Rail Overcrossing Alternative)*

The City shall conduct a habitat assessment at least 30 days and no more than 90 days prior to construction activities (i.e., ground-clearing and grading, including removal or trimming of trees) of all trees on the site that are proposed for removal. The assessment shall be designed to identify trees containing suitable roosting habitat for bats and to identify measures needed to protect roosting bats. The assessment shall be conducted by a qualified bat biologist. Trees containing suitable roosting habitat shall be assumed to contain roosting bats.

The City shall ensure that, prior to the removal of trees greater than 10 inches in diameter scheduled during seasonal periods of bat activity (February 15 through April 15 and September 1 through October 15), trees shall be removed in a two-day process on two consecutive days in the following manner:

- Trees smaller than 10 inches in diameter shall be removed first; and
- Trees greater than 10 inches in diameter shall be removed in a two-step/two-day process, under the direction of a qualified biologist as follows:

- A qualified biologist shall train workers on the proper techniques for tree removal to protect bats. The qualified biologist must be on site during the first day of tree removal and should be available for consultation after all tree removal workers are trained;
- Day 1 cutting shall include removal of branches and small limbs using chainsaws (no dozers or backhoes); and
- Day 2 the remainder of the tree shall be removed the day after limb and branch removal.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Rail Overcrossing Alternative (Less than Significant with Mitigation)

Implementation of Mitigation Measure BIO-1 would mitigate these potential impacts on special-status and migratory birds to less-than-significant levels by requiring pre-construction surveys by a qualified biologist to determine whether special-status or migratory bird nests are present at or near the Preferred Project site or the Rail Overcrossing Alternative site and ensuring protection of nests and young until they have fledged.

Implementation of Mitigation BIO-2 would reduce the impacts to special-status bats because the disturbance caused by chainsaw noise and vibration during tree limbing, coupled with the physical alteration of the branches and limbs would cause the bats to abandon the roost tree after nightly emergence for foraging. Removing the tree the next day prevents re-habituation and re-occupation of the altered tree, thereby reducing impacts to roosting bats to less-than-significant levels.

Impact: **BIO-2: Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Rail Overcrossing Alternative (Significant)

<u>Construction</u>

Construction of the Preferred Project would result in the loss of three valley oak trees from a small area of valley oak riparian habitat along Steele Creek. Construction of the Rail Overcrossing Alternative would result in the loss of 28 trees from approximately 0.05 acre of valley oak riparian habitat along Steele Creek. Although individual trees would be removed within the valley oak riparian area, the overall riparian vegetation community would not be affected in terms of acres of habitat loss.

Construction of either the Preferred Project or the Rail Overcrossing Alternative may require construction of a temporary stream crossing within Steele Creek to allow construction vehicles to access the east side of the rail corridor. Construction activities may temporarily affect the freshwater marsh habitat. In

addition, permanent rip-rap may be placed into Steele Creek to stabilize the culvert crossing once construction is complete. The impact would be significant.

No riparian habitat or wetlands occur at the W. Sixth, W. Seventh, or W. Eighth Street Project areas, and no trees would be removed. Therefore, no impact to a sensitive natural vegetation community would occur at these locations.

Operation

No vegetation communities would be removed during the operational phase of the Preferred Project or Rail Overcrossing Alternative. Therefore, no operational impact to a sensitive natural vegetation community would occur.

Mitigation: **Mitigation Measure BIO-3: Avoid Fill of Wetlands and Waters *(Preferred Project and Rail Overcrossing Alternative)***

The City of Santa Rosa shall avoid fill of jurisdictional waters and wetlands, to the extent feasible. Temporary construction-related disturbance and fill in jurisdictional waters and wetlands shall be restored and restoration measures may include:

- Sediments and foreign materials deposited by construction activities shall be removed.
- Restoration of disturbed waters, wetlands, or stream gradients to original contour and hydrologic condition.
- Bank stabilization prior to the onset of winter using straw, matting, wattles, or other suitable means.
- Reestablishment of riparian habitat and stands of sensitive status wetland plant cover using native seed stock, container plants, and/or cuttings collected from as close to the impact vicinity as possible.
- Protection and conservation of topsoil within riparian habitat and stands of sensitive status wetland plant cover.

Both the federal and State Clean Water Act maintains a “no net loss” policy for wetlands; therefore if permanent fill in Steele Creek cannot be avoided, the City shall compensate for the permanent impacts at a ratio of 1:1 or as required by the regulatory agencies. To determine the amount of wetlands impacted, the City shall complete a wetlands delineation and have the delineation verified by the USACE. Once the wetland impacts are determined then the amount of mitigation necessary to meet the 1:1 mitigation ratio can be calculated.

Mitigation can then be accomplished in one of three ways: 1) purchase wetland credits from an approved wetland mitigation bank, 2) on-site creation of new wetland or enhancement of existing degraded wetlands, or 3) off-site creation of new wetland or enhancement of existing degraded wetlands.

Should the City decide to meet the mitigation requirement through on-site or off-site wetland or waters creation, a wetland mitigation and monitoring plan shall be developed to ensure that the mandated mitigation ratios and annual monitoring requirements are achieved. The mitigation and monitoring plan must include the follow elements:

- Objectives. A description of the resource type(s) and amount(s) that will be provided, the method of compensation (restoration, establishment, preservation etc.), and how the anticipated functions of the mitigation project will address watershed needs.
- Site selection. A description of the factors considered during the site selection process.
- Site protection instrument. A description of the legal arrangements and instrument including site ownership that will be used to ensure the long-term protection of the mitigation project site.
- Baseline information. A description of the ecological characteristics of the proposed mitigation project site.
- Determination of credits. A description of the number of credits to be provided including a brief explanation of the rationale for this determination.
- Mitigation work plan. Detailed written specifications and work descriptions for the mitigation project.
- Maintenance plan. A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.
- Performance standards. Ecologically-based standards that will be used to determine whether the mitigation project is achieving its objectives.
- Monitoring requirements. A description of parameters monitored and monitoring schedule to determine whether the mitigation project is on track to meet performance standards and if adaptive management is needed. Monitoring shall continue until results indicate that the no net loss performance standard has been achieved.
- Long-term management plan. A description of how the mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource.
- Adaptive management plan. A management strategy to address unforeseen changes in site conditions or other components of the mitigation project.
- Financial assurances. A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the mitigation project will be successfully completed.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Rail Overcrossing Alternative (Less than Significant with Mitigation)

Because it is not possible at this time to determine the exact disturbance to Freshwater Marsh Wetlands, the precise wetland mitigation amounts cannot be calculated. However, the 1:1 wetland and waters replacement ratio described in Mitigation Measure BIO-3 would result in no net loss of Freshwater Marsh Wetlands. Therefore, implementation of Mitigation Measure BIO-3 would reduce the impact to a less-than-significant level by either avoiding loss of freshwater marsh wetlands, where feasible, or by removing temporarily placed fill and

restoring the temporarily impact areas and by purchasing wetland mitigation bank credits, or by creating wetlands/waters either on- or off-site for the permanent loss of wetlands.

Impact: **BIO-3: Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Rail Overcrossing Alternative (Significant)

Construction

Construction of the Project at Jennings Avenue would require construction of a temporary stream crossing within Steele Creek to allow construction vehicles to access the east side of the rail corridor. In addition, permanent rip-rap may be placed into Steele Creek to stabilize the culvert crossing once construction is complete. For this Project, if any work occurs within the ordinary high water mark for the creek, impacts to the freshwater marsh wetland and jurisdictional waters would occur and the impact would be significant.

Construction access across Steele Creek could be provided in two ways: 1) temporarily place fill in the channel to provide construction access across the creek or 2) temporarily place steel plates/ramps over the channel to provide construction access at limited locations.

Figure 2-2 (At-grade Rail Crossing-Conceptual Design) in Chapter 2, Project Description shows the construction area boundary for the Preferred Project. The construction area boundary includes approximately 40 feet of Steele Creek to provide construction access to the rail crossing and to construct pathway improvements. The temporary impact in Steele Creek would vary depending upon the construction access method utilized. Should construction activities include temporary fill in Steele Creek to provide the necessary construction access, then approximately 25 cubic yards of temporary fill in jurisdictional wetlands and waters would occur. There would be no temporary impacts to wetlands or waters if access is provided using construction plates.

Figure 2-5 (Rail Overcrossing Alternative Improvements Plan) in Chapter 2, Project Description shows the construction area boundary for the Rail Overcrossing Alternative. The construction area extends approximately 110 feet along Steele Creek at Jennings Avenue and an additional 20-foot crossing approximately 230 feet upstream of Jennings Avenue.

Both the Preferred Project and the Rail Overcrossing Alternative would have the same amount of permanent fill associated with the placement of fill for the pathway improvements over the existing storm drain box culvert. Both temporary and permanent fill within Steele Creek would be a significant impact.

Stormwater runoff leaving the construction area at the Project site at Jennings Avenue could carry sediment or other contaminants into the Steele Creek. Uncontrolled stormwater runoff could result in discharge and sedimentation to jurisdictional waters, which would be a significant impact.

There are no jurisdictional wetlands or waters or waters at the W. Sixth, W. Seventh, or W. Eighth Street Project areas. There would be no wetland or waters impacts in these locations.

Operation

Neither operation of the Preferred Project nor the Rail Overcrossing Alternative would affect wetlands or waters, as no ground disturbance would occur.

Mitigation: **Mitigation Measure HWQ-2 Manage Construction Storm Water *(Preferred Project and Rail Overcrossing Alternative)***
This mitigation measure is defined in Impact HWQ-1 of Section 3.8, Hydrology and Water Quality.

Mitigation Measure BIO-3: Avoid Fill of Wetlands and Waters *(Preferred Project and Rail Overcrossing Alternative)*

This mitigation is defined above under Impact BIO-2.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Rail Overcrossing Alternative (Less than Significant with Mitigation)

Because it is not possible at this time to determine the exact fill amounts, the precise wetland mitigation amounts cannot be calculated. However, the 1:1 wetland and waters replacement ratio described in Mitigation Measure BIO-3 would result in no net loss of wetlands. Therefore implementation of the mitigation measure would reduce the impact to a less-than-significant level by either avoiding fill into jurisdictional wetlands and waters, where feasible, or by removing temporarily placed fill and restoring the temporarily impact areas and by purchasing wetland mitigation bank credits, or by creating wetlands/waters either on- or off-site for the permanent loss of wetlands.

Implementation of Mitigation Measure HWQ-2 would reduce impacts to less-than-significant levels by protecting the area from construction-related runoff and sedimentation into Steele Creek.

Impact: BIO-4: Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

Construction and Operation

Because of the intense urbanization of the Steele Creek corridor and the low water flows, Steele Creek is not considered a movement corridor for aquatic wildlife. The riparian corridor adjacent to Steele Creek may be used by common terrestrial wildlife, such as striped skunk and raccoon, and, therefore, it is considered a movement corridor. Construction activities could limit movement of local wildlife; however, the impact would be temporary and limited to periods when construction would occur in the riparian corridor. Therefore, the impact would be less than significant.

Although birds use the riparian corridor along Steele Creek and the Preferred Project and the Rail Overcrossing Alternative would result in the removal of several trees, riparian cover would remain for birds as they move north and south along Steele Creek. Therefore, Project construction would not result in impacts on the movement of native special-status wildlife species or on wildlife migration corridors along Jennings Avenue.

No resident or migratory fish or wildlife species or migratory wildlife corridors are present at the W. Sixth, W. Seventh, and W. Eighth Street Project sites. Therefore, neither Project construction nor operation would result in impacts on the movement of native special-status wildlife species or on wildlife migration corridors.

Construction impacts to wildlife nursery sites (i.e., nesting by birds and nursery roosting by bats) are evaluated in the analysis of Impact BIO-1.

Mitigation: No mitigation is needed.

Impact: **BIO-5: Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

<u>Construction</u>

Construction of an at-grade rail crossing at Jennings Avenue would require the removal of up to three valley oak (*Quercus lobata*) trees, each of which qualifies as a heritage tree under the City's tree ordinance. The trees are located in a cluster on the east side of the rail corridor near the Steele Creek culvert. Table 3.3-3 (Trees Greater than 4" dbh[a] with a Potential to be Removed, Preferred Project) provides the species and size of the trees to be removed from within the construction area of the Preferred Project. The location of the trees is shown in Appendix D (Special Status Species Tables), Figure D-1 (Preferred Project – At-grade Rail Crossing – Potential Tree Removal).

Table 3.3-3 Trees Greater than 4" dbh[a] with a Potential to Be Removed, Preferred Project

Tree ID #	Species	Size (dbh)	Native?	Subject to Tree Ordinance?
1	Valley Oak (*Quercus lobata*)	12"	Yes	Yes
2	Valley Oak	12"	Yes	Yes
3	Valley Oak	15"	Yes	Yes

Note (a): dbh = diameter at breast height

Several trees along the new fence lines at Jennings Avenue may require trimming to provide adequate space for installation. Street trees may require trimming to accommodate installation of the fencing at W. Sixth Street. Removal and alteration of trees would require a permit in accordance with the City of

Santa Rosa Tree Ordinance. The loss of trees that qualify under the City of Santa Rosa Tree Ordinance would be a significant impact.

Operation

Operation of the Preferred Project would not require removal of trees. Therefore, there would be no impact.

Mitigation: **Mitigation Measure BIO-4: Compliance with Santa Rosa Tree Ordinance *(Preferred Project and Rail Overcrossing Alternative)***

The City of Santa Rosa shall replace trees removed during construction in accordance with the Santa Rosa Tree Ordinance, Chapters 17-24 of the City Code. Such trees removed shall be replaced with native tree species determined suitable for the site by a qualified arborist, horticulturist, landscape architect, or biologist.

- For each heritage tree or tree removed during construction or lost due to construction-related impacts, a replacement tree shall be planted according to the following City of Santa Rosa requirements:
  - For each six inches or fraction thereof of the diameter of a tree which was approved for removal, two trees of the same genus and species as the removed tree (or another species, if approved by the Director of Community Development), each of a minimum 15-gallon container size, shall be planted on the Project site, provided however, that an increased number of smaller size trees of the same genus and species may be planted if approved by the Director, or a fewer number of such trees of a larger size if approved by the Director.
  - For each six inches or fraction thereof of the diameter of a tree which was not approved for removal, four trees of the same genus and species as the removed tree (or another species, if approved by the Director), each of a minimum 15-gallon container size, shall be planted on the Project site, provided however, that an increased number of smaller size trees of the same genus and species may be planted if approved by the Director, or a fewer number of such trees of a larger size if approved by the Director.
  - Payment of in-lieu fees in accordance with the Tree Ordinance, so long as fees are used for planting of trees within the City.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Tree loss impacts would be reduced to less-than-significant levels by implementation of Mitigation Measure BIO-4, which would fulfill the intent of the City's tree preservation ordinance and codes by planting replacement trees for the trees removed during construction of the Preferred Project. The measure would therefore resolve the conflict with the local tree protection ordinances.

Analysis: *Rail Overcrossing Alternative (Significant)*

Construction

Construction of the Rail Overcrossing Alternative at Jennings Avenue would require the removal of 32 trees greater than 4 inches in diameter. Table 3.3-4

(Trees Greater than 4" dbh to Be Removed, Rail Overcrossing Alterative) provides the species and size of the trees to be removed. The location of the trees is shown in Appendix D (Special Species Status Tables), Figure D-2 (Rail Overcrossing Alternative Potential Tree Removal).

Several additional tree saplings less than 4 inches in diameter would also be removed on the east and west sides of the rail corridor. These trees are not listed in the table below, as they are not large enough to qualify as heritage trees in the City's Tree Ordinance, or as trees that provide important riparian tree canopy associated with Steele Creek.

Table 3.3-4 Trees Greater than 4" dbh to Be Removed, Rail Overcrossing Alternative

Tree ID #	Species	Size (dbh)	Native?	Subject to Tree Ordinance?
1	Valley Oak	12"	Yes	Yes
2	Valley Oak	12"	Yes	Yes
3	Valley Oak	15"	Yes	Yes
4	Valley Oak	4"	Yes	No
5	Valley Oak	19"	Yes	Yes
6	Valley Oak	4"	Yes	No
7	Valley Oak	6"	Yes	Yes
8	Valley Oak	23"	Yes	Yes
9	Valley Oak	17"	Yes	Yes
10	Valley Oak	17"	Yes	Yes
11	Big Leaf Maple (*Acer macrophyllum*)	6"	No	No
12	Valley Oak	5"	Yes	No
13	Valley Oak	5"	Yes	No
14	Valley Oak	4"	Yes	No
15	Valley Oak	Trunk 1 – 5" Trunk 2 – 2"	Yes	No
16	Valley Oak	Trunk 1 – 4" Trunk 2 – 2"	Yes	No
17	Valley Oak	Trunk 1 – 7" Trunk 2 – 2"	Yes	Yes
18	Valley Oak	4"	Yes	No

Tree ID #	Species	Size (dbh)	Native?	Subject to Tree Ordinance?
19	Valley Oak	6”	Yes	Yes
20	Valley Oak	4”	Yes	No
21	Valley Oak	22”	Yes	Yes
22	Valley Oak	Trunk 1 – 10” Trunk 2 – 10”	Yes	Yes
23	Valley Oak	Trunk 1 – 5” Trunk 2 – 3”	Yes	No
24	Valley Oak	5”	Yes	No
25	Valley Oak	8”	Yes	Yes
26	Valley Oak	7”	Yes	Yes
27	Valley Oak	20”	Yes	Yes
28	Mulberry (*Morus alba*)	4”	No	No
29	Sweet Gum *(Liquidambar styraciflua*)	9”	No	No
30	Coast Redwood (*Sequoia sempervirens*)	18”	Yes	Yes
31	Valley Oak	Trunk 1 – 12” Trunk 2 – 12” Trunk 3 – 11”	Yes	Yes
32	Valley Oak	Trunk 1 – 16” Trunk 2 – 17” Trunk 3 – 12”	Yes	Yes

Excavations associated with construction of the Rail Overcrossing Alternative may also damage the root systems of eight additional trees in the vicinity of the rail overcrossing construction area, four of which are subject to the Santa Rosa Tree Ordinance. These trees are intended to be protected during construction, however, because they are located within ten feet of the proposed excavation limits, the drip line of the trees may be present within the construction zone, and they would be subject to possible damage during construction due to activities within the root zone and under the tree canopy. Table 3.3-5 (Trees Greater than 4” dbh with a Potential to be Affected, Rail Overcrossing Alternative) provides the species and size of the trees. The location of the trees is shown in Appendix D (Special Status Species Tables), Figure D-2 (Rail Overcrossing Alternative Potential Tree Removal).

The loss of trees that qualify under the City of Santa Rosa Tree Ordinance would be a significant impact.

Table 3.3-5 Trees Greater than 4" dbh with a Potential to be Affected, Rail Overcrossing Alternative

Tree ID #	Species	Size (dbh)	Native?	Subject to the Tree Ordinance?
33	Unknown Ornamental	Trunk 1 – 11" Trunk 2 – 12" Trunk 3 – 15" Trunk 4 – 12" Trunk 5 – 10"	No	No
34	English Walnut (*Juglans regia*)	19"	No	No
35	Sweet Gum	19"	No	No
36	Coast Redwood	40"	Yes	Yes
37	Coast Redwood	29"	Yes	Yes
38	Coast Redwood	6"	Yes	Yes
39	Valley Oak	Trunk 1 – 4" Trunk 2 – 2"	Yes	No
40	Valley Oak	16"	Yes	Yes

Operation

No tree removal would occur as part of the operation of the rail overcrossing. Therefore, no operational impact would occur.

Mitigation:

Mitigation Measure BIO-4: Compliance with Santa Rosa Tree Ordinance *(Preferred Project and Rail Overcrossing Alternative)*

This mitigation measure is defined above for the Preferred Project.

Mitigation Measure BIO-5: Minimize Impacts to Trees Adjacent to Construction Areas *(Rail Overcrossing Alternative)*

The City of Santa Rosa shall identify trees to be protected and retained during construction and minimize potential impact to these trees by implementing the following measures. These trees shall be marked on construction plans and protected during construction activities.

- Construction activities within the dripline of trees to be retained adjacent to construction area shall be avoided.
- A qualified arborist shall identify the location of exclusion fencing to be installed around trees to be retained.
- Prior to the start of construction, the City or its contractor shall install exclusion fencing around the dripline of trees to be retained and within 50 feet of any grading or construction activity. If disturbance cannot be avoided within the dripline of a protected tree, then the City shall identify the area needed for construction and place exclusion fencing at that location. No grading, digging, trenching, use of fill soils, covering the ground with asphalt or concrete, or landscaping with plants that require more than two years of summer watering to survive. Excessive foot traffic, operating heavy

equipment, and parking vehicles shall be avoided in the area to avoid compaction in the root zone.

- Prior to construction, the City shall verify that the temporary construction fencing is installed and approved by a qualified arborist. Any encroachment within these areas must first be approved by a qualified arborist and the City. Temporary fencing shall be continuously maintained by the contractor until all construction activities near the trees are completed. No construction activities shall occur within the exclusion fencing.
- Pruning of trees to be retained shall be completed by either a certified arborist or by the contractor under supervision of either an International Society of Arboriculture qualified arborist, American Society of Consulting Arborists consulting arborist, or a qualified horticulturalist.
- For each protected tree that is damaged or dies from construction-related impacts, replacement trees shall be planted according to requirements presented in Mitigation Measure BIO-4.

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

Impacts would be reduced to less-than-significant levels by implementation of Mitigation Measure BIO-4 and Mitigation Measure BIO-5, which would fulfill the intent of the City's tree preservation ordinance and codes by minimizing impacts on protected trees and by requiring planting of replacement trees for any heritage trees that are removed, in substantial accordance with local jurisdiction requirements. These measures would therefore resolve the conflict with the local tree protection ordinances.

Impact: **BIO-6: Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Rail Overcrossing Alternative (Significant)

Construction

The Jennings Avenue Project site and the W. Sixth, W. Seventh, and W. Eighth Street Project areas are located within the Santa Rosa Plain Conservation Strategy (SRPCS) study area. Several local jurisdictions, including the City of Santa Rosa, have adopted the SRPCS Agreement that supports the conservation approach set forth in the Strategy and recognizes that a number of important implementation issues still need to be finalized before the Strategy can be put into full effect. An implementation plan has yet to be finalized for the Strategy. The Project sites are located in areas identified in the SRPCS as previously developed, with no potential for impact. The Project sites are not located in areas identified in the SRPCS as having potential presence of California tiger salamander or listed rare plants.

The City of Santa Rosa Citywide Creek Master Plan identifies the desire to preserve valley oaks along the rail corridor (Santa Rosa 2013a). The Master Plan recommends habitat enhancement involving removal of invasive species and replacement with native vegetation. The Preferred Project would remove

three valley oak trees along Steele Creek and the rail corridor as discussed in BIO-5 above. The removal of the three valley oaks for the Preferred Project and the 30 valley oaks for the Rail Overcrossing Alternative could conflict with the City's Creek Master Plan, and the impact could be significant.

No other adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan exists for the Project area.

No trees are present within the W. Sixth, W. Seventh, or W. Eighth Street construction area boundaries. However, trees on the eastern side of SMART right of way south of W. Sixth Street may be trimmed to provide adequate space to install the new fence. No trees would be trimmed at the W. Seventh or W. Eighth Street Project areas. Therefore, neither Project construction nor operation would conflict with habitat conservation plans.

Operation

Operation of the Preferred Project or the Rail Overcrossing Alternative would not result in tree removal; therefore, no operational impact would occur.

Mitigation: **Mitigation Measure BIO-4: Compliance with Santa Rosa Tree Ordinance *(Preferred Project and Rail Overcrossing Alternative)***

This mitigation measure is defined in Impact BIO-5 for the Preferred Project.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Rail Overcrossing Alternative (Less than Significant with Mitigation)

The impacts from removal of the valley oaks along the rail corridor would be reduced to less-than-significant levels by implementation of Mitigation Measure BIO-4, which would fulfill the intent of the City's Citywide Creek Master Plan by planting replacement trees for the heritage trees removed during construction of the Preferred Project and the Rail Overcrossing Alternative. The measure would therefore resolve the conflict with the Santa Rosa Citywide Creek Master Plan.

3.3.7 Cumulative Impacts

Impact: **BIO-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to biological resources?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Crossing Alternative (Less than Significant)

The Project has potential impacts to special-status birds, bats, protected trees, valley oak riparian, and temporary impacts during construction to wetlands (Steele Creek).

None of the cumulative projects listed in Chapter 3, Environmental Settings, Impacts, and Mitigation Measures, Table 3-1 (Projects Considered for Cumulative Impacts) would have impacts to riparian vegetation or a creekbed. Therefore, the Project plus cumulative projects would not result in a significant cumulative impact to valley oak riparian or wetlands in a creek.

With regard to impacts to special-status birds and bats, it is assumed the cumulative projects could have similar impacts as described for the Project and would follow similar mitigation included in this EIR. The mitigation measures identified in this EIR comply with all appropriate policies for preserving and protecting biological resources in the Santa Rosa General Plan 2035 and follow standard procedures recommended by resource agencies. Specific cumulative projects, as well as other projects in the greater Santa Rosa area would be required to follow similar mitigation to avoid or protect special-status birds and bats. Therefore, impacts remaining after implementation of mitigation would not occur or would be minor and would not make a considerable contribution to any cumulative impact on special-status birds or bats.

With regard to impacts to trees and compliance with a tree ordinance, similar to the Project, the cumulative projects would be required to comply with the City's Tree Ordinance (*Santa Rosa City Code, Title 17 Environmental Protection, Chapters 17-24 Trees*). Therefore, there would not be a conflict with the tree ordinance and the Project could not contribute to a significant cumulative impact.

Mitigation: No mitigation is needed.

3.3.8 References

Jennings, M.R. and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Prepared for the California Dept. of Fish and Game Inland Fisheries Div. Rancho Cordova, Calif. 255 pp.

Santa Rosa, City of (Santa Rosa). 2013a. *Santa Rosa Citywide Creek Master Plan.* August.

Santa Rosa. 2013b. *Planning Watershed Area: Santa Rosa Creek (Map 3 of 4).*

Sawyer et al. 2009. *A Manual of California Vegetation Second Edition.*

U.S. Army Corps of Engineers (USACE). 2008. *Corps of Engineers Wetland Delineation Manual: Arid West Region.*

Wildlife Research Associates (WRA) and Jane Valerius Environmental Consulting (Valerius). 2014. *Biological Resource Analysis and Habitat Assessment.* July.

3.4 Cultural Resources

This section evaluates the potential impacts related to cultural resources during construction and operation of the Project. To provide the basis for this evaluation, the Setting section provides an overview of the historical, archaeological, and paleontological setting for the Project areas. Descriptions in this section are based on Project-specific technical studies and record searches for cultural and paleontological resources. The evaluation section establishes thresholds of significance, evaluates potential cultural resource impacts, and describes appropriate mitigation measures, as necessary.

3.4.1 Impacts Evaluated in Other Sections

The following subjects are related to cultural resources, but are evaluated in other sections of this document:

- Potential impacts to the existing visual character or quality of a site and its surrounding are addressed in Section 3.1, Aesthetics.
- Potential impacts to heritage trees are addressed in Section 3.3, Biological Resources.

3.4.2 Cultural Resources Setting

Descriptions in this section are based on an archaeological resources study (ASC 2014), a project-specific historical resource study (see Appendix E), and a paleontological records search (Finger 2013).

Archaeological Setting

The study area at Jennings Avenue and at W. Sixth, W. Seventh, and W. Eighth Streets are all composed of recent, undifferentiated Holocene (present to 10,000 B.P.) alluvium. This alluvium can be sand, silt, or gravel and are fine-grained sediment that forms on valley floors from drainages and flooding within the valley. The age and make up of these deposits indicates potential subsurface sensitivity. (ASC 2014)

Soils within the Area of Potential Effects (APE) at Jennings Avenue Project area consist primarily of the Zamora series, with small inclusions of Cole, Yolo, Cortina, and Pajaro soils. Zamora silty clay loam is a well-drained soil that occurs on alluvial fans and backslopes with 0 to 2 percent slopes. Soils within the W. Sixth, W. Seventh, and W. Eighth Street study areas are primarily composed of Yolo silt loam, a well-drained soil that occurs in alluvial fans and backslopes with 0 to 2 percent slopes. (ASC 2014)

Steele Creek, which is located parallel to the Sonoma-Marin Area Rail Transit (SMART) rail corridor on the east side of the rail corridor, flows through a portion of the study area at Jennings Avenue. Santa Rosa Creek, a major drainage for the Santa Rosa Plain, flows west to east approximately 0.25 mile south of the W. Sixth, W. Seventh, and W. Eighth Street study area. The natural vegetation of both Steele Creek and Santa Rosa Creek consists of Valley Oak Savanna, which is made up of tall, broad-leaved deciduous trees dominated by valley oaks with California Prairie grasses covering the ground. (ASC 2014)

Prehistoric and Ethnographic Periods

Ethnographic literature indicates that at the time of historic contact, the study areas were within the traditional territory of speakers of a Southern Pomo language, one of seven distinct languages associated with the larger Pomoan linguistic family.

Southern Pomo territory lay entirely within Sonoma County, extending from just north of Cotati to near the Mendocino/Sonoma county border in the north and from the eastward drainage of the Russian River westward to the coast, or to Kashaya Pomo territory in the central coast region. The Southern Pomo lived in both permanent villages and seasonal campsites located at strategic resource areas. The Southern Pomo comprised a number of village communities, consisting of semisubterranean ceremonial houses, temporary structures, and dwelling houses made from redwood bark.

One of these communities, the Bitakomtara, generally occupied an area in and near the modern city of Santa Rosa (Bean and Theodoratus 1978:280). Ethnographic literature indicates that the nearest Southern Pomo village to the study areas was hukabetca'wi, near the south bank of Santa Rosa Creek, a short distance from the depot of the California Northwestern railway (Barrett 1908:222-223). This village most likely served as the principle village for the Bitakomtara.

The Southern Pomo utilized a variety of resources in their environment; their diet depended in part on the time of the year. Fish, acorns, grain roots, bulbs, and buckeyes were eaten year round. Fish were dried and supplemented with fresh meat, waterfowl, fresh greens, berries, and fruit. Southern Pomo lands were divided into family-owned tracts with gathering rights belonging exclusively to members of the owning family and communally controlled areas for hunting and fishing.

Archaeological Records Search and Literature Review

A records search and literature review was conducted by archaeologists from the Anthropological Study Center at Sonoma State University (ASC) in April 2014 at the Northwest Information Center (NWIC) of the California Historical Resources Information System. The NWIC, an affiliate of the State of California Office of Historic Preservation, is the official State repository of archaeological and historical records and reports for an 18-county area that includes Sonoma County. The records search included a review of all site records in a ¼-mile radius and study reports on file within a ¼-mile radius of the Project areas. (ASC 2014)

Jennings Avenue

Two previous studies have been completed within a ¼-mile radius of the Jennings Avenue site. Origer conducted the first recorded archaeological survey in 1990 for a proposed fiber optics cable running from Point Arena to San Francisco, including along the Northwestern Pacific Railroad line through the proposed APE at Jennings Avenue (Origer 1990). This survey covered approximately 50 percent of the study area. Although Origer recorded several archaeological resources, none were located within the Project area. In 1999, a records search and literature review was conducted by ASC along the Northwestern Pacific Railroad line (ASC 1999). Four resources were noted as part of the records review, none of which are located within the study area. (ASC 2014) The records search indicated no prehistoric resources have been recorded within the study area for Jennings (ASC 2014).

W. Sixth, W. Seventh, W. Eighth Street Project Area

Six previous archaeological resources studies have been completed within a ¼-mile radius of the W. Sixth, W. Seventh, and Eighth Street study areas. The first recorded archaeological survey was conducted by Origer in 1990 for a proposed fiber optics cable running from Point Arena to San

Francisco, including along the Northwestern Pacific Railroad line through the study areas at Sixth, Seventh, and Eighth Streets (Origer 1990). None of the archaeological resources recorded by Origer are located within the study areas at Sixth, Seventh, and Eighth Streets.

In 1999, a records search and literature review was conducted by ASC along the Northwestern Pacific Railroad line (ASC 1999). Four resources were noted as part of the record review, two of which (CA-SON-1511H and P-49-002599) are within the current records search radius for the W. Sixth, W. Seventh and W. Eighth Street study areas. (ASC 2014)

One prehistoric resource has been recorded within the ¼-mile search radius around the W. Sixth, W. Seventh, and W. Eighth Street areas. In 2000, an obsidian artifact concentration (P-49-002820) consisting of primary, secondary, and tertiary flakes near Second, Third and Davis streets was recorded (see Appendix E).

Historical Setting

The following historic overview was taken from the Historical Resources Technical Report completed for the Project (see Appendix E), unless otherwise indicated.

The City of Santa Rosa is centrally located within the County of Sonoma along Highway 101 approximately 55 miles north of San Francisco. The city was officially founded in 1854. Most of the early American settlers during the mid-1800s established farmsteads throughout the area, and Santa Rosa thrived through the first decades of the twentieth century as the trading center of the rich agricultural lands. In 1870, the first railroad was established through the city. The railroads made Santa Rosa a shipping hub for agricultural products, the lumber industry and basalt quarries.

The 1906 earthquake greatly damaged the city's business section, and most of the commercial district had to be rebuilt. Santa Rosa continued to grow and prosper at a steady rate up to World War II. The war brought the development of two military airfields and government housing, which brought thousands of new residents to the area. Postwar through to the 1970s, Santa Rosa continued to experience large increases in population and residential development. The growth spread out into the outlying farmsteads, which were generally replaced by large neighborhoods of tract housing and typical suburban development.

Jennings Avenue Project Area

In the 1850s, much of the lands around the Santa Rosa area became available to American settlers. Thomas Jennings purchased what was to be known as Jennings Farm and worked locally as a grocer. In 1877, T. Jennings is listed as the owner of 230 acres of land straddling the railroad line just northwest of Santa Rosa. By 1905, Edward B. Jennings, a descendant of Thomas Jennings, had started subdividing the property and selling off lots for development. Buyers included John P. Overton and James W. Hall, who subsequently sold off the property mostly to farming families.

In 1938, the site located just northwest of the Santa Rosa city limits was still identified on the Thomas Brothers' map as the Jennings Farm. Previous research indicates that from the 1920s through to the 1960s, the Jennings Avenue neighborhood consisted mostly of self-sufficient Italian farming families. A 1964 aerial photograph shows the majority of the land surrounding the intersection of Jennings Avenue and the railroad remained agricultural land. The only visible buildings near the Project site in the 1964 aerial are an apartment complex at the corner of Jennings Avenue and Range Avenue, and small residential and agricultural buildings on the south side of Jennings Avenue between the railroad and Range Avenue. The apartment complex is still

extant, while the buildings south of Jennings Avenue were demolished and replaced by multi-family housing in 2007.

In the late 1960s and early 1970s, the parcels between Range Avenue and the rail corridor were subdivided, and multi-family housing units were developed, ranging from duplexes to larger apartment complexes. The majority of the buildings in this area were constructed after 1966.

The sites directly west of the rail corridor and north of Jennings Avenue were also subdivided, and multi-family housing was developed beginning in the late 1960s. South of Jennings Avenue, a single-story office park consisting of seven separate buildings was constructed in the early 1980s.

In 1978, the City of Santa Rosa extended Range Avenue south of Jennings Avenue through the existing farm sites on the east side of the rail corridor. The City's forced sale of the land substantially altered the setting of the Jennings Avenue neighborhood from a rural farmland to one with relatively dense single and multi-family residential developments. The parcels between Range Avenue and the rail corridor currently feature apartment complexes constructed between 2005 and 2007. One of the apartment complexes is located immediately southeast of the Jennings Avenue Project area.

<u>Summary of Historical Resources in the Vicinity of the Jennings Avenue Project Area</u>

The California Historical Resources Information System (CHRIS) records search indicated that there are no known historic resources listed in the national, state or local inventories of historical resources within the Jennings Avenue Project area. Three agricultural sites in the vicinity of the Project site were previously evaluated and none were found to be eligible for inclusions in the national or state registers. Additionally, the previously evaluated resources have since been demolished, and all three sites have been developed with modern multi-family housing.

A windshield survey was conducted, and background archival research was undertaken on the subject Project area. The survey did not identify any potential historic resources within the Project area. Several properties were noted to be over-fifty years old including single-family homes on the east side of Range Avenue and one apartment complex at the west side of Range Avenue near Jennings Avenue. However, these properties are over two hundred feet from the Project site and would not be impacted by the proposed crossing. Therefore, an evaluation of those properties was not undertaken.

Based on the CHRIS record search, a review of City of Santa Rosa planning documents, a windshield survey, and archival research, there were no historical resources located within two hundred feet of the Jennings crossing study area.

W. Sixth, W. Seventh, and W. Eighth Street Project Areas

The arrival of the railroad in 1870 served as a catalyst for significant development surrounding the depot and the rail corridor. A commercial district was constructed within the immediate vicinity of the train depot; today the area is known as the Railroad Square Preservation District, a National Register Historic District. North of the depot, and several blocks away from either side of the tracks, are single-family residential neighborhoods. To the northwest of the Railroad Square Preservation District is the locally recognized West End Preservation District. Industries were established on the parcels immediately flanking the tracks north of W. Sixth Street. The parcels adjacent to the tracks from W. Sixth Street to W. Ninth Street have been identified as the potential North Railroad District which appears eligible for inclusion in the National Register of Historic Places (NRHP) (see Appendix E).

The land immediately adjacent to the rail corridor and along Wilson Avenue between W. Sixth Street and W. Ninth Street was primarily developed by industrial and commercial ventures which benefitted from the new rail line. The majority of the large industrial buildings were constructed from 1875-1907. The main industries to be established in this area included the Santa Rosa Flour Mill, De Turk's Winery, general warehouses, the American Produce Company warehouse and a lumber yard. Subsequently, small-scale commercial development along the east side of Wilson replaced what had been primarily residential between 1925 and 1947 and included: grocery stores, a saloon, a cooper shop, a winery, a blacksmith shop and residential hotels. Today, the area remains both industrial and commercial, and maintains many of its early structures.

Commercial areas, residential neighborhoods, and industrial ventures were developed adjacent to the rail corridor in the area. West of the rail corridor at the three crossings is the locally recognized West End Preservation District. South of W. Sixth Street is the locally recognized Railroad Square Preservation District and National Register Historic District. Finally, the crossing sites are located within the potential North Railroad District which appears eligible for the NRHP. The area analyzed in this report extends roughly 100 feet north of W. Eighth Street, east of Wilson Street, south of W. Sixth Street, and west of Adams Street. Each of these districts is summarized in more detail below and Figure 3.4-1 (Historic District at Potential Crossing Closure Sites) illustrates the location of these districts.

West End Preservation District

The West End Preservation District was designated by the Santa Rosa City Council in 1996 and is bounded by W. Ninth Street on the north, Santa Rosa Creek and W. Sixth Street on the south, the Northwestern Pacific (NWP) Rail corridor on the east and N. Dutton Avenue on the west. The period of significance for the district is from the 1870s to the 1940s, and the following context statement from the Santa Rosa Zoning Code identifies the historical significance of the district:

> The West End Preservation District is significant for architecture as a large and reasonably intact 19th and early 20th century working-class residential district of small houses on the "wrong side of the tracks" and for its ethnic history as Santa Rosa's large and long-standing Italian neighborhood. The large 'Italian Town' in and around the West End district is Santa Rosa's only historic ethnic neighborhood. Besides representing a good cross section of very modest residential architecture of the 1870s through the 1940s, the West End shows traces of its heritage in its rustic landscaping, stonework and folk art, and the generally handmade character of the home improvements.
>
> The residential development of the District can be seen in the architectural progression of West Sixth, Seventh, and Eighth Streets. Early construction can be found on West Sixth Street, examples of the late 1890s on West Seventh Street, and earth 20th century styles are visible on West Eighth Street. These streets combined with others in the District are an important part of the historic building fabric. De Turk's winery and the Burris Distillery buildings are important early commercial buildings. Of particular importance is the round barn used by De Turk, which is unusual in its design and one of few in the country.

The West End Preservation District maintains significant historical connections to the NWP rail corridor, the Railroad Square Preservation District, and the potential North Railroad District. The West End Preservation District was identified in the Railroad Square National Register Nomination as the "West Side Neighborhood," and it was noted as providing housing to the mostly Italian-American residents who built many of the significant buildings within the Railroad Square Preservation District and who initially stayed in the Railroad Square Preservation District hotels

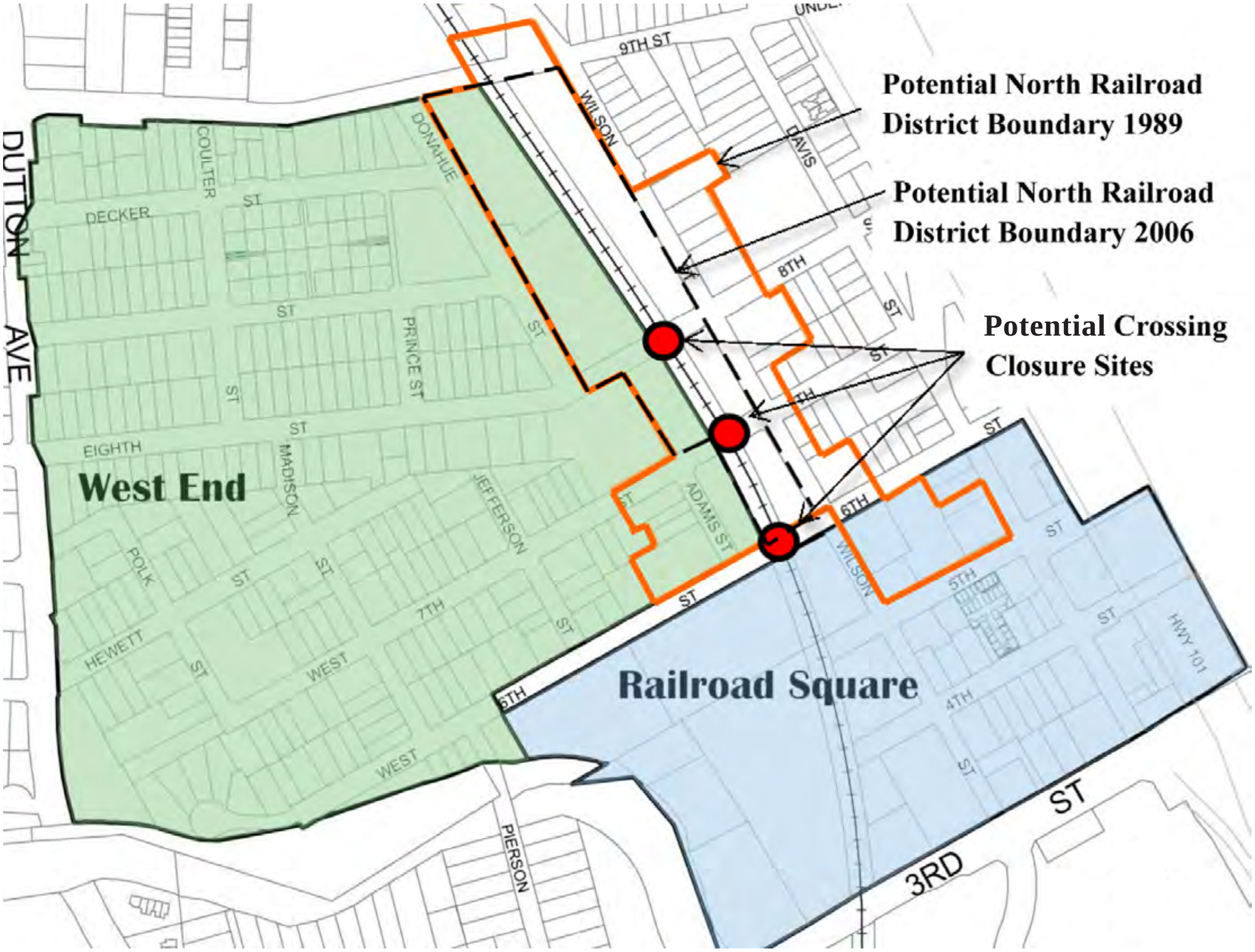
before finding housing in the West End Preservation District. Many of the Italian-American immigrants had expertise as stone masons, and in the late 1880s when the Southern Pacific established a rail line from Santa Rosa to numerous quarries, the West End Preservation District provided the opportunity to live near the rail corridor and find easy transportation to work in area quarries.

Railroad Square Preservation District

The Railroad Square Preservation District was listed on the NRHP in 1979, as the Railroad Square District, and was designated a local preservation district by the Santa Rosa City Council in 1990. The local preservation district is more expansive than the National Register District and is bounded by W. Sixth Street on the north, Third Street on the south, Highway 101 on the east, and Santa Rosa Creek on the west. The period of significance for the district is from 1888 to 1923, and the following context statement from the Santa Rosa Zoning Code identifies the historical significance of the district:

> The Railroad Square Preservation District is a homogeneous mixture of building styles and construction techniques, not found elsewhere in the city, that reflect its commercial development during the railroad era, and the final onslaught of post-World War II freeway systems which effectively divided the district from the central downtown area and allowed it to retain its links with transportation systems of the past. The district maintains most of its original composition and the commercial storefronts, hotels, and remaining warehouses represent a fairly accurate snapshot of Railroad Square during the height of rail travel and commerce and its rebirth after the 1906 earthquake.
>
> Fourth Street, the main thoroughfare through the District, begins as a tree shaded park located next to a 1904 Railroad Depot (Fourth Street and Wilson Street) constructed from locally quarried basalt. The Depot is one of four such blue basalt buildings located within the District, all of which are of significant historic and architectural value (Western Hotel at 10 Fourth Street, LaRose Hotel at 100 Fifth Street, and REA Express Building at 9-11 Fifth Street). Along Fourth Street is a series of one story brick commercial buildings built from 1915 to 1925. Adjacent to the rail corridor, which form a ribbon through the western end of the District, is a series of brick warehouses built from 1888 to 1914. The commercial brick buildings located in the District are of particular importance because the 1906 and 1969 earthquakes, as well as urban renewal, destroyed most of those found within Santa Rosa City limits.

Much of the documentation of the Railroad Square Preservation District notes the significant connections between the Railroad Square Preservation District, the NWP railroad, the West End Preservation District, and the potential North Railroad District. The primarily commercial Railroad Square Preservation District developed around the establishment of the NWP railroad and the train depot. Industries were then established within close proximity to the railroad in order to take advantage of shipping goods and products along the railroad. At the same time, residential neighborhoods were established to provide housing for the laborers and business owners who worked within Railroad Square Preservation District or the potential North Railroad District areas.



LEGEND

West End Preservation District

Railroad Square Preservation District

Potential North Railroad District 1989

Potential North Railroad District 2006

N

GHD

City of Santa Rosa

City of Santa Rosa
Jennings Avenue Pedestrian and
Bicycle Rail Crossing EIR

Historic District at Potential Crossing Closure Sites

Job Number	8410868
Revision	A
Date	Aug 2014

Figure 3.4-1

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Potential North Railroad District

The potential North Railroad District was first defined by Anne Bloomfield in 1989 as "a strip of commercial and industrial buildings along both sides of Wilson Street and the NWP Rail corridor just north the Railroad Square Preservation District." The extent of the Bloomfield-defined potential district has never been fully re-evaluated since 1989; however, a redefined potential North Railroad District and numerous individual properties have been re-evaluated more recently.

The industrial component of the potential North Railroad District was re-evaluated as part of the Santa Rosa Phase 1 SMART Corridor Project in 2006. The more narrowly defined study determined that the potential North Railroad District (as defined by the boundaries established in 2006) appeared eligible for the NRHP with six contributing resources, including a segment of the NWP Railroad.

The previous studies on the potential North Railroad District clearly establish that there is a significant historical connection between the North Railroad District, the NWP railroad, the Railroad Square Preservation District and the West End Preservation District. Throughout numerous documents, connections are made between the coming of the railroad and the establishment of industries along the tracks; the Italian-American community that lived in the West End and worked in industries within the potential North Railroad District; and that industry workers patronized commercial enterprises located along Wilson Avenue and within the Railroad Square Preservation District.

The potential North Railroad District (2006) has not been officially listed as a national, State or local historic district. However, the industrial component of the potential North Railroad District (as defined in 2006) with six potential contributing resources was evaluated and found to be potentially eligible for the NRHP.

The 2006 study also found that all the potential contributors appeared individually eligible for the NRHP except for the NWP Railroad segment between W. Sixth Street and College Avenue due to issues of integrity. The physical changes that were noted included the reduction of track lines and the changes to the settings in which the track side has been sealed and extensive freight decks have been removed. The potential North Railroad District (2006) was found to meet the applicable historical significance criteria and appeared eligible for listing in the NRHP; therefore, the potential district and its six contributors are considered historical resources.

Summary of Historical Resources in the Vicinity of the Crossing Closure Sites

One National Register historic district, one locally designated historic district, one potential historic district, five identified historic buildings, and one identified historic railroad segment occur within the immediate vicinity of the three crossing closure sites (ASC 2014).

The W. Sixth Street closure site is located at the southern boundary of the potential North Railroad District (2006), the eastern boundary of the West End Preservation District and the northern boundary of the Railroad Square Preservation District. The NWP railroad itself is considered an individual resource within the Project site because it has been identified as a contributing element of the potential North Railroad District (2006). The Santa Rosa Flour Mill (99 W. Sixth Street) occupies the parcel northeast of the intersection. No buildings stand on the parcels to the south. To the southeast is surface parking and to the southwest is an industrial yard enclosed by chain link fencing. The building at 5 W. Sixth Street does not appear to be a historic resource either as part of a district or individually. Therefore, while the site would be adjacent to three historic districts, only two contributing individual resources are present at the W. Sixth Street intersection.

The W. Seventh Street closure site is located at the eastern boundary of the West End Preservation District and within the potential North Railroad District (2006). Individual resources previously identified at the intersection include the NWP railroad, American Produce Company (21 W. Seventh Street), the Santa Rosa Flour Mill (99 W. Sixth Street) and the Lee Brothers & Co. warehouse (90 W. Eighth Street). A surface parking area occupies the south end of the Lee Brothers & Co. parcel.

The W. Eighth Street closure is located at the eastern boundary of the West End Preservation District and within the potential North Railroad District (2006). Individual resources previously identified at the intersection include the NWP railroad, American Produce Company (21 W. Seventh Street), part of the De Turk Winery Complex (806 Donahue Street), Laws & Yaeger Lumber building (701 Wilson Street) and the Lee Brothers & Co. warehouse (90 W. Eighth Street). The W. Eighth Street site is the only crossing which provides access from Wilson Street to the northern section of the West End Preservation District, which is largely disconnected from the District's southern portion.

Paleontological Setting

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites and marine coral) and fossils of microscopic plants and animals (microfossils). The age and abundance of fossils depend on the location, topographic setting and particular geologic formation in which they are found.

The Society of Vertebrate Paleontology (SVP) has established guidelines for the identification, assessment and mitigation of adverse impacts on nonrenewable paleontological resources (SVP 1996, 2012). Table 3.4-1 below describes the SVP criteria for determining the potential to discover paleontological resources in geological units.

Table 3.4-1 Criteria for Determining Paleontological Potential

Paleontological Potential	Description
High	Geologic units from which vertebrate or significant invertebrate or plant fossils have been recovered. Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant.
Undetermined	Geologic unit(s) for which little to no information is available.
Low	Geologic units that are not known to have produced a substantial body of significant paleontological material.

Source: SVP 1996, 2012

The fossil yielding potential of a particular area is highly dependent on the geologic age and origin of the underlying rocks. According to geologic maps of the Santa Rosa 7.5' quadrangle, the surficial geology of the entire Project area consists of Holocene alluvial fan and fluvial terrace deposits (Qhf). The sediments are gravel, sand, and silt derived primarily from Pleistocene and older sedimentary and igneous units, including older Tertiary to Pleistocene non-marine gravel, late Tertiary volcanic rocks, and Mesozoic bedrock units of the Franciscan Complex, Coast Range ophiolite, and Great Valley sequence. (Finger 2013)

Also mapped in the general vicinity is undivided Pleistocene alluvium (Qhp), which may also occur in the subsurface below the Holocene deposits. There are also alluvial fans and fluvial terrace deposits composed of unsorted gravel, sand, and silt. The unit is distinguished from Qhf fan

deposits by its dissected irregular surface morphology and incision by younger Pleistocene and Holocene alluvial deposits. (Finger 2013)

A paleontological records search of the University of California Museum of Paleontology (UCMP) database revealed 11 Quaternary fossil localities in Sonoma County: one Holocene and the others late Pleistocene. There are two localities of the latter age, one of which is located in Santa Rosa. The Crandall site (V3650) is two miles southeast of the proposed Project, and yielded the robust ground sloth (*Glossotherium robustus*). The Rincon Valley West site (V90056), questionably ascribed to the Glen Ellen Formation, is three miles northwest of the Project site and yielded the fossilized remains of a horse (*Equus*). The other localities yielded 10 additional Rancholabrean specimens, including *Clemmys* (pond turtle), *Glossotherium harlani* (Harlan's ground sloth), Bison *bison antiquus* (extinct bison), and *Mammut americanum* (American mastodon). (Finger 2013)

The Rancholabrean fauna recovered from Sonoma County indicate that the Quaternary alluvium (Qhf), which is undifferentiated Pleistocene–Holocene, should be considered highly sensitive for significant paleontological resources. (Finger 2013)

3.4.3 Regulatory Framework

Federal

National Register of Historic Places

The National Register of Historic Places (NRHP) is the official list of the Nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archaeological resources.

National Register Bulletin Number 15, *How to Apply the National Register Criteria for Evaluation* describes the Criteria for Evaluation for the National Register as being composed of two factors (US Department of the Interior 1997). First, the property must be "associated with an important historic context." The National Register identifies four possible context types, of which at least one must be applicable at the national, state, or local level. As listed under Section 8, "Statement of Significance," of the National Register of Historic Places Registration Form, these are:

- Property is associated with events that have made a significant contribution to the broad patterns of our history.
- Property is associated with the lives of persons significant in our past.
- Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- Property has yielded, or is likely to yield, information important to prehistory or history.

Second, for a property to qualify under the NRHP's Criteria for Evaluation, it must also retain "historic integrity of those features necessary to convey its significance." While a property's significance relates to its role within a specific historic context, its integrity refers to "a property's physical features and how they relate to its significance." To determine if a property retains the physical characteristics corresponding to its historic context, the National Register has identified seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association.

State

California Environmental Quality Act

CEQA requires lead agencies to determine if a proposed project would have a significant effect on historical resources and unique archaeological resources. The CEQA Guidelines define a historical resource as: (1) a resource listed in the California Register; (2) a resource included in a local register of historical resources, as defined in the California Public Resources Code (PRC) Section 5020.1(k), or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of CEQA Section 21084.1 and CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of CEQA Section 21083 regarding unique archaeological resources. A unique archaeological resource is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
- Has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person (CEQA Section 21083.2[g]).

The CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of a project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

California Register of Historic Resources

The California Register is "an authoritative listing and guide to be used by state and local agencies, private groups and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for eligibility to the California Register are based on National Register criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for or listed in the National Register.

To be eligible for the California Register as a historical resource, a prehistoric or historic-period resource must be significant at the local or State level under one or more of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;

- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded, or may be likely to yield, information important in prehistory or history (CEQA Guidelines Section 15064.5 [a][3]).

For a resource to be eligible for the California Register, it must also retain enough integrity to be recognizable as a historical resource and to convey its significance. The seven aspects of integrity are: location, design, setting, materials, workmanship, feeling and association. A resource that does not retain sufficient integrity to meet the National Register criteria may still be eligible for listing in the California Register. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register if it maintains the potential to yield significant scientific or historical information or specific data (OHP 2011).

California's list of special considerations is shorter than the criteria considerations for the National Register listed above. It includes some allowances for moved buildings, structures, or objects, as well as requirements for proving the significance of resources that are less than 50 years old and discussion of the eligibility of reconstructed buildings.

California Public Resources Code (PRC)

Several sections of the PRC protect cultural resources and PRC Section 5097.5 protects vertebrate paleontological sites located on public land. Under Section 5097.5, no person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site (including fossilized footprints), inscriptions made by human agency, rock art, or any other archaeological, paleontological, or historical feature situated on public lands, except with the express permission of the public agency that has jurisdiction over the lands.

PRC Section 5097.98 states that if Native American human remains are identified within a project area, the landowner must work with the Native American Most Likely Descendant as identified by the California Native American Heritage Commission (NAHC) to develop a plan for the treatment or disposition of the human remains and any items associated with Native American burials with appropriate dignity. These procedures are also addressed in Section 15046.5 of the CEQA Guidelines. California Health and Safety Code Section 7050.5 prohibits disinterring, disturbing, or removing human remains from a location other than a dedicated cemetery. Section 30244 of the PRC requires reasonable mitigation for impacts on paleontological and archaeological resources that occur as a result of development on public lands.

California Health and Safety Code

Section 7050.5 of the Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If determined to be Native American, the coroner must contact the NAHC.

Senate Bill 18

Senate Bill 18 (SB 18), which went into effect January 1, 2005, set forth new requirements for local governments (city and county) to consult with Native American tribes to aid in the protection of traditional tribal cultural places through local land use planning. The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early stage of planning, for the purpose of protecting, or mitigating impacts to, cultural places. The

purpose of involving tribes at these early planning stages is to allow consideration of cultural places in the context of broad local land use policy, before individual site-specific, project-level land use designations are made by a local government.

California Native American Historical, Cultural and Sacred Sites Act

This Act applies to both State and private lands. The Act requires that upon discovery of human remains, that construction or excavation activity cease and that the county coroner be notified. If the remains are of a Native American, the coroner must notify the NAHC. The NAHC then notifies those persons mostly likely to be descended from the Native American remains. The Act stipulates the procedures the descendants may follow for treating or disposing of the remains and associated grave goods.

Regional and Local

City of Santa Rosa Designation

The Santa Rosa City Council adopted a Preservation Ordinance in 1988 and created the City's Cultural Heritage Board. The Board recommends to the City Council designation of landmarks and preservation districts, reviews permits for alterations to landmarks and buildings within preservation districts, and promotes public awareness of historic resources. Article III of Chapters 17-22 of the City Code allows for the City Council to designate landmarks and defines a landmark as “any site… place, building, structure, street, street furniture, sign, work of art, natural feature or other object having a specific historical, archaeological, cultural or architectural value in the City and which has been designated a landmark by the City Council,” and preservation districts as “any clearly described geographic area having historical significance or representing one or more architectural periods or styles typical to the historic of the City which has been designated a preservation district by the City Council.” The City of Santa Rosa currently has twenty-one landmarks and eight designated historic preservation districts. Generally, historical resources in Santa Rosa include the following properties:

- Properties or Districts listed in the National Register of Historic Places.
- Properties that have been designated local Landmarks by the City of Santa Rosa.
- Properties within a local designated Preservation District that contribute to the significance of the District.
- Properties listed as having historical significance in the City’s local register (the Santa Rosa Cultural Heritage Survey) even though the properties have not been officially designated as Landmarks or Preservation Districts by the City.
- Other properties presumed to be historically or culturally significant under the provisions of CEQA by the City of Santa Rosa.

Similar to the federal and state criteria, the following specific criteria are used by the City of Santa Rosa in order to determine historical significance:

- Event. Is the property associated with an event that has made a significant contribution to Santa Rosa’s history; or
- Person. Is the property associated with the life of a person who was significant in Santa Rosa’s history; or
- Design. Does the property embody the distinctive characteristics of a type, period, or method of construction found in Santa Rosa before 1950; or

- Information. Has the property yielded, or may be likely to yield, information important in Santa Rosa's prehistory or history; and
- Integrity. Does the property retain enough aspects of location, design, setting, workmanship, materials, feeling, and association to convey its historic significance?

City of Santa Rosa Municipal Code Chapters 17-22

Under City of Santa Rosa Municipal Code 17-22, any site, including trees or other significant landscaping, place, building, structure, street, sign, work of art, natural feature, or other object of special historical, cultural, archaeological, or architectural value, may be designated as a historical landmark by the City Council, with the recommendation of the Cultural Heritage Board. Additionally, any area having historical significance or representing an architectural period or style typical to the history of the city may be designated as a preservation district. Before a landmark or structure within a preservation district is restored, developed, demolished, or otherwise altered a landmark alteration permit must be granted by the Zoning Administrator, for minor projects (generally only those alterations that are not visible from a public street), or the Cultural Heritage Board.

City of Santa Rosa General Plan Goals and Policies

The following are the goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.

HP-A Protect Native American heritage.

HP-A-1 Review proposed developments and work in conjunction with the California Historical Resources Information System, Northwest Information Center at Sonoma State University, to determine whether project areas contain known archaeological resources, either prehistoric and/or historic-era, or have the potential for such resources.

HP-A-2 Require that project areas found to contain significant archaeological resources be examined by a qualified consulting archaeologist for recommendations concerning protection and preservation.

HP-A-3 If cultural resources are encountered during development, work should be halted to avoid altering the materials and their context until a qualified consulting archaeologist and Native American representative (if appropriate) have evaluated the situation, and recorded identified cultural resources and determined suitable mitigation measures.

HP-A-4 Consult with local Native American tribes to identify, evaluate, and appropriately address cultural resources and tribal sacred sites through the development review process.

HP-A-5 Ensure that Native American human remains are treated with sensitivity and dignity and assure compliance with the provisions of California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98.

HP-B Preserve Santa Rosa's historic structures and neighborhoods.

HP-B-1 Ensure that alterations to historic buildings and their surrounding settings are compatible with the character of the structure and the neighborhood. Ensure that specific rehabilitation projects follow the Secretary of Interior's Standards for Rehabilitation to a reasonable extent, taking into consideration economic and technical feasibility.

HP-B-8 Preserve sites that are eligible for the National Register of Historic Places, and pursue listing eligible sites in the Register.

HP-C Increase public participation in the historic preservation process.

HP-C-2 Hold neighborhood meetings to achieve the following:

- Increase public awareness of preservation issues and opportunities;
- Provide information on the historic designation process;
- Publicize low-impact/low-cost/high benefit options for energy efficiency upgrades in context of green building program requirements; and
- Alert neighborhoods, when necessary, to the pending loss of significant buildings or other features.

North Santa Rosa Station Area Specific Plan Goals and Policies

The *North Santa Rosa Station Area Specific Plan* does not include goals and policies that address cultural resources that are applicable to the Project.

Downtown Santa Rosa Station Area Specific Plan Goals and Policies

The *Downtown Santa Rosa Station Area Specific Plan* does not include goals and policies that address cultural resources that are applicable to the Project.

3.4.4 Evaluation Criteria and Significance Thresholds

Table 3.4-2 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
CR-1: Would the Project cause a substantial adverse change in the significance of an archaeological resource?	Adverse alteration of those physical characteristics of a historical resource that justify its eligibility for the CRHR or as a unique archaeological resource.	CEQA Guidelines Appendix G, Checklist Item V (a) & (b) CEQA §21083.2(g)
CR-2: Would the Project cause a substantial adverse change in the significance of a historical resource?	Adverse alteration of those physical characteristics of a historical resource that justify its eligibility for the CRHR or as a local landmark or preservation district.	CEQA Guidelines Appendix G, Checklist Item V (a) CEQA Guidelines §15064.5 CEQA §21084.1 Santa Rosa Municipal Code Chapters 17-22
CR-3: Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Disturbance of a known fossil locality or within a geologic unit that has high paleontological sensitivity.	CEQA Guidelines Appendix G, Checklist Item V (c) Public Resources Code §5097.5
CR-4: Would the Project disturb any human remains, including those interred outside of formal cemeteries?	Disturbance of human remains, including Native American human remains, associated grave goods, or items of cultural patrimony.	CEQA Guidelines Appendix G, Checklist Item V (d) Public Resources Code §5097.9

3.4.5 Methodology

This analysis identifies known cultural resources within the study areas, including any known prehistoric and historic archaeological sites, historic architectural resources, and historic

landscapes; identifies the potential for unknown cultural resources to be present in the study areas; and analyzes the potential impacts to these resources. The paleontological resources analysis identifies the potential for paleontological resources to be present in the Project area and identifies the potential impacts to these resources. The analysis considers that potential sources of impacts to cultural and paleontological resources from the Preferred Project and the Rail Overcrossing Alternative may be as follows:

- Damage to or destruction of archaeological and paleontological resources as a result of ground disturbance;
- Disturbance of currently unknown human remains as a result of construction grading, trenching, and excavation;
- Demolition or removal of historically or architecturally significant buildings, structures, or objects; or a change in the historic integrity; and
- Access to cultural and paleontological materials by project personnel.

Archaeological Resources

The significance of most prehistoric and historic-period archaeological sites is usually determined based on National Register Criterion D and/or California Register Criterion 4.

These criteria stress the importance of the potential for information contained within the site rather than its significance as a surviving example of a type or its association with an important person or event. Archaeological resources may also be assessed under CEQA as unique archaeological resources, defined as archaeological artifacts, objects, or sites that contain information needed to answer important scientific research questions.

Archaeologists from the Anthropological Study Center conducted an archaeological resources field survey of the Jennings Avenue area. A field survey was not completed for the W. Sixth, W. Seventh, and W. Eighth Street Closure areas because the entire Project area is paved.

Historical Resources

Potential impacts on historic architectural resources were assessed by determining whether a project could cause a substantial adverse change in the significance of any such resources within the study area. Under CEQA, a project is considered to have a significant impact on a cultural resource if it will “cause a substantial adverse change in the significance of a historical resource as defined in [CCR Title 14 Chapter 3] §15064.5.” The CEQA Guidelines state that physical demolition of a resource by definition constitutes a “substantial adverse change" and would therefore have a significant adverse effect on the resource. Furthermore, relocation or “alteration of the resource or its immediate surroundings” can also constitute a substantial adverse change in the significance of an historical resource if it would result in “material impairment” of the resource. A project is considered to result in material impairment when it "alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion" in the CRHR.

The City of Santa Rosa’s process for determining a project’s impact is described in the Cultural Heritage Board’s publication Processing Review Procedures for Owners of Historic Properties. This document outlines both the environmental review and design review process for projects involving historical resources. In reviewing projects that involve exterior alterations to designated landmarks or structures within a preservation district, the Board considers both the Design Guidelines for Historic Properties and the *Secretary of the Interior’s Standards for Rehabilitation*, primarily

Standards 9 and 10 which directly address new construction and serve as the basis for evaluating the potential impacts of a project on historic districts, as follows.

- New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
- New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired (Weeks and Grimmer 1995).

The historic resources analysis was based on the guidelines established in several City of Santa Rosa planning documents pertaining to historic resources and districts and the CEQA Statute and Guidelines. A CHRIS records search was performed, and archival research was conducted at the San Francisco Public Library, the Sonoma County Library and the City of Santa Rosa website. A field visit was also conducted.

Paleontological Resources

For this analysis, “unique paleontological resource” is deemed to include resources that qualify as significant under SVP criteria (see Paleontological Setting). Potential Project effects on paleontological resources are limited to construction-related disturbance.

3.4.6 Impacts and Mitigation Measures

Table 3.4-3 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.	
CR-1: Would the Project cause a substantial adverse change in the significance of an archaeological resource?	LSM	LSM	LSM	LSM
CR-2: Would the Project cause a substantial adverse change in the significance of a historical resource?	LSM	LSM	SUM	LSM
CR-3: Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	LS	LS	LS	LSM
CR-4: Would the Project disturb any human remains, including those interred outside of formal cemeteries?	LSM	LSM	LSM	LSM
CR-C-1: Would the Project result in a cumulatively considerable contribution to a cumulative impact?	LSM	LSM	LSM	LSM

Notes: NI = No Impact
LS = Less than Significant
LSM = Less than Significant with Mitigation
SUM = Significant and Unavoidable with Mitigation

Impact: **CR-1: Would the Project cause a substantial adverse change in the significance of an archaeological resource?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Rail Overcrossing Alternative (Significant)

Construction

No archaeological sites were identified during the field review and record searches performed for the Preferred Project and the Rail Overcrossing Alternative study areas. Several modern refuse areas exist along the rail corridor; however, the refuse areas do not appear eligible for the CRHR or for Santa Rosa's landmark program.

NAHC reviewed the Sacred Lands File for information on Native American cultural resources in the Jennings Avenue and W. Sixth, W. Seventh, and W. Eighth Street Project areas. NAHC provided a list of Native American individuals/organizations who may have knowledge of cultural resources in the area. Letters were sent to individuals on the list, and two responses were provided. The Federated Indians of Graton Rancheria (FIGR) wrote that FIGR's "concerns for this Project have been addressed through Section 106 consultation for the entire SMART project under permits granted to SMART by the U.S. Army Corps of Engineers and the U.S. Coast Guard." Stewarts Point Rancheria provided two responses stating that they had no concerns about the Project.

Although construction of the Preferred Project and the Rail Overcrossing Alternative would have no impact on known archaeological resources, there is a possibility that previously undiscovered archaeological resources and subsurface deposits are present within the study area. If present, excavation, grading, and movement of heavy construction vehicles and equipment could expose, disturb or damage any such previously unrecorded archaeological resources. Because the possibility of encountering archaeological resources during construction cannot be completely discounted, the impact related to the potential disturbance or damage of previously undiscovered archaeological resources, if present, is considered significant.

Operation

Following construction, operation of the Preferred Project and the Rail Overcrossing Alternative would not require ground disturbance. Therefore, no operational impact to archaeological resources would occur.

Mitigation: **Mitigation Measure CR-1: Protect Archaeological Resources Discovered During Construction *(Preferred Project and Rail Overcrossing Alternative)***

The City shall temporarily halt construction in the vicinity of an archaeological resource, such as chert, obsidian flakes, projectile points, mortars, pestles, dark friable soil containing shell and bone dietary debris, heat-affected rocks, or human burials, that are encountered during construction activities. Work shall halt and workers shall avoid altering the materials and their context. Project personnel shall not collect cultural materials. The City shall then retain the services of a qualified professional archaeologist to evaluate the find and provide appropriate recommendations. If the archaeologist determines that the find

potentially qualifies as a unique archaeological resource for purposes of CEQA (CEQA Guidelines Section 15064.5[c][3]), all work must remain stopped in the immediate vicinity to allow the archaeologist to evaluate any materials and recommend appropriate treatment. The City shall notify interested Native American tribes of such discoveries and consult with the tribe from which the resources originated, according to the Native American Heritage Commission. Such treatment and resolution shall include either modifying the Project to allow the materials to be left in place or undertaking data recovery of the materials in accordance with standard archaeological methods. The preferred treatment of the resource is protection and preservation.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Rail Overcrossing Alternative (Less than Significant with Mitigation)

Mitigation Measure CR-1 would require the City and its contractors to adhere to appropriate procedures and protocols in the event that a possible archaeological resource is discovered during construction. Implementation of this mitigation measure would reduce impacts on any previously unrecorded and buried (or otherwise obscured) archaeological deposits discovered during construction of the Preferred Project or Rail Overcrossing Alternative to a less-than-significant level.

Impact: **CR-2: Would the Project cause a substantial adverse change in the significance of a historical resource?**

Analysis: *Preferred Project – At-grade Rail Crossing with Rail Crossing Closure at W. Sixth or W. Seventh Street (Significant)*

Preferred Project – At-grade Rail Crossing with Rail Crossing Closure at W. Eighth Street (Significant)

<u>Construction and Operation</u>

Jennings Avenue Project Area

The historical resources evaluation conducted for the Preferred Project did not identify any historical resources within the study area for an at-grade rail crossing at Jennings Avenue. Therefore, construction of an at-grade rail crossing at Jennings Avenue would not impact a historical resource or property.

W. Sixth, W. Seventh, and W. Eighth Street Project Areas

There are several historical resources located either within or immediately adjacent to the study area for a crossing closure at W. Sixth, W. Seventh, or W. Eighth Street, including the railroad tracks themselves. Two designated historic districts, one potential historic district, and six historical resources were identified within the immediate vicinity of the three crossing closure sites. A crossing closure at any of the three sites would not lead to the physical demolition, destruction or relocation of any identified historical resources. However, installation of fencing and bollards and the change in access as a result of the crossing closure may indirectly impact the historic districts and the surrounding contributing resources as presented below.

Fencing and Bollards

Installation of fencing and vehicle guard rails at any of the three potential crossing closure locations would not destroy historic material that characterizes any of the contributing historic properties in the vicinity of the potential crossing closure sites, because the work would be contained within the street right-of-way and along the edge of the railroad property which already maintains numerous modern intrusions. Approximately half of the properties within the area feature modern fencing along the rail corridor. However, if documented historic features identified in the 2006 Historic Resource Inventory of the Northwestern Pacific Railroad, such as a switching device, signal shelter, siding, extended ties, 54-mile post, whistle board and X-markers, were removed during installation of any crossing closure, the impact would be significant.

The railroad tracks themselves have been identified as a contributing resource to the potential North Railroad District (2006), but construction would not directly impact the function or appearance of the tracks, except to remove the asphalt street and concrete crossing surfaces between the tracks.

The introduction of new elements, i.e., the fencing and guard rails, into the crossing closure site has the potential to indirectly impact historical resources within the immediate vicinity the W. Sixth, W. Seventh, and W. Eighth Street crossing closure. Indirect impacts could occur if the fencing and guard rail design is incompatible in the size, scale, and design to the surround historic districts. The impact would be significant.

Closing Access across the Railroad at W. Sixth, W. Seventh, or W. Eighth Street

The at-grade rail crossings at W. Sixth, W. Seventh and W. Eighth Street have provided access across the rail corridor since the development of the railroad and surrounding neighborhoods in the late 1800s. The three crossings historically served to connect the West End residential area with Santa Rosa's commercial areas east of the rail corridor. The streets themselves have never been identified as character defining features or contributing resources within any of the historic resource documentation for any of the districts or individual properties. However, the historic connections between the West End Preservation District, the potential North Railroad District (2006), and the Railroad Square Preservation District were acknowledged in the documentation for both the Railroad Square Preservation District and the potential North Railroad District (2006). Documentation for the historic districts identify that many of the Italian-American residents lived in the West End, constructed buildings in Railroad Square, ran and patronized stores along Wilson Avenue and worked at the local mills and the winery along the rail corridor.

The crossing closure sites are located within the complex area bordered and bisected by three major transportations routes (the rail corridor, Highway 101 and Highway 12) and Santa Rosa Creek. Additionally, the West End Preservation District features two differently aligned street grids which abut just west of the crossing locations and limit access within and between the districts. There is only one street (W. Eighth Street) that provides a connection between the northern and southern portions of the West End Preservation District, and in particular

access to the northern section of the District is quite restricted with W. Eighth Street providing the only access into the northern section from Wilson Avenue. Because of the railroad track's proximity to Santa Rosa Creek, there are no crossings of the rail corridor between Third Street and W. Sixth Street. W. Sixth, W. Seventh and W. Eighth Street then provide three crossings over the tracks until the next crossing at W. Ninth Street at the northern boundary of the West End District. However, the block from W. Eighth Street to W. Ninth Street is three times the distance as the blocks between W. Sixth, W. Seventh and W. Eighth Street.

Because the crossings were all extant during the various periods of significance for each district, and have historically served as primary connections between the West End Preservation District, the potential North Railroad District (2006) and the Railroad Square Preservation District, as well as primary connections within the potential North Railroad District (2006), it appears that all three crossings potentially contribute to the overall historical significance and understanding of the three districts. Therefore, for the purposes of this evaluation, each closure site was assessed for potential impacts to the integrity of the districts in order to determine compliance with the Secretary of the Interior's Standards, in particular Standard 9 (see Methodology section above for an explanation of Standard 9).

W. Sixth Street at the crossing location falls outside of any established or potential district boundary. The connection across the railroad at W. Sixth Street to the southern end of the West End Preservation District would be eliminated, however a connection would still be available at W. Seventh Street; therefore the significant connection between the districts and within the potential North Railroad District would essentially remain intact. The impact of a closure at W. Sixth Street would be less than significant.

The W. Seventh Street crossing closure site is located within the potential North Railroad District (2006) and at the eastern boundary of the West End Preservation District. The crossing at W. Seventh Street provides a significant connection and internal access across the rail corridor within the potential North Railroad District. The connection across the railroad at W. Seventh Street to the southern end of the West End Preservation District would be eliminated, however a connection would still be available at W. Sixth Street; therefore the significant connection between the districts and within the potential North Railroad District would essentially remain intact. The impact of a closure at W. Seventh Street would be less than significant.

The W. Eighth Street crossing closure site is located at the eastern boundary of the West End Preservation District and within the potential North Railroad District (2006). The W. Eighth Street site is the only crossing which provides a connection to the northern section of the West End Preservation District. The connection across the railroad at W. Eighth Street to the northern end of the West End Preservation District would be eliminated with a closure of the W. Eighth Street crossing. The W. Eighth Street crossing provides the only direct connection from the potential North Railroad District (2006) to the northern section of the West End Preservation District, and the only internal access across the rail corridor at the northern end of the potential North Railroad District.

Therefore, an important connection would be lost, which could impact the integrity of the West End Preservation District and the potential North Railroad District (2006). The impact would be significant.

Mitigation: **Mitigation Measure CR-2: Protect Historic Resources *(Preferred Project)***

The City shall not remove any feature identified in the 2006 assessment of the NWP rail corridor at any of the three potential crossing closure sites such as: a switching device, signal shelter, siding, extended ties, 54-mile post, whistle board and X-markers.

The City of Santa Rosa shall design the crossing closure to be in conformance with the Secretary of the Interior's Standards, the development standards of the Historic (-H) combining district and the Station Area (-SA) combining district, and the City of Santa Rosa's Design Guideline for Historic Properties. The crossing closure design shall be reviewed and approved by a professional who meets the Secretary of Interior's qualification standards for professionals in historic architecture and architectural history to ensure that the following design requirements are achieved:

- Bollards shall be used, rather than guard rails or other type of barricade as part of the closure design. Install the bollard type identified for the Railroad Square Sub-area and identified in Street Furnishing Palette Plan dated September 20, 2010. The bollard design in the Street Furnishing Palette Plan includes use of a North Yorkshire model, non-lighted, cast iron bollard with a sphere on top (manufactured by Holophane). (*City of Santa Rosa Design Guidelines, 2.6.9*)
- The fencing and bollards shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment. (*Secretary of the Interior's Standard 9*).
- New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (*Secretary of the Interior's Standard 10*)
- Any fencing or walls shall be decorative in nature, and shall not be solid or opaque. Materials such as wrought iron, metal or wood are encouraged. (*City of Santa Rosa Design Guideline 2.6.4*)
- Any new fencing shall be designed to be compatible with the architectural style, material, scale and era of the … neighborhood. (*City of Santa Rosa Design Guidelines 4.7-5)*

After Mitigation: *Preferred Project – At-grade Rail Crossing with W. Sixth or W. Seventh Street Closure (Less than Significant with Mitigation)*

Preferred Project – At-grade Rail Crossing with W. Eighth Street Closure (Significant and Unavoidable)

Mitigation Measure CR-2 would require the fencing and the use of bollards designed to protect the historic integrity of the surrounding areas. Implementation

of this mitigation measure would reduce impacts on historic districts to a less-than-significant level for the W. Sixth, W. Seventh, and W. Eighth crossings by ensuring that the new features can be clearly differentiated from the old and that the design is compatible with the surrounding historic properties and its environment.

Although Mitigation Measure CR-2 would reduce the impact to the historic integrity of the surrounding historic districts for all three crossings to a less-than-significant level, there is no mitigation measure identified that would reduce the impact of the closed access at W. Eighth Street. The closure of the W. Eighth Street crossing would impact the overall historic connections between the potential and defined historic districts, because the W. Eighth Street crossing provides the only direct access into the northern section of the West End Preservation District. Mitigation would not provide an equivalent connection. The significant connections between the residential component of the West End Preservation District and the commercial and industrial components of the potential North Railroad District (2006) and the Railroad Square Preservation District would be lost with closure of a crossing at W. Eighth Street. The impact would be significant and unavoidable, even with mitigation.

Analysis: *Rail Overcrossing Alternative (Less than Significant)*

Construction and Operation

No historical resources were identified within the Jennings Avenue Project area; therefore, the construction of a rail overcrossing would have no impact on any historical resources at the Jennings Avenue location. The rail overcrossing would not require the closure of any existing at-grade crossings within the City of Santa Rosa; therefore, there would be no additional impacts to any historical resources outside of the Jennings Avenue area.

Mitigation: No mitigation is needed.

Impact: CR-3: Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Analysis: Preferred Project – At-grade Rail Crossing (Less than Significant)

Construction and Operation

The results of a paleontological records search at the UCMP indicate that the Preferred Project is not located within an area of a known fossil locality (Finger 2013). Therefore, construction of the Preferred Project would not disturb a known fossil.

The natural geology of the Project area has a generally high paleontological sensitivity. However, excavations required to construct the Preferred Project are not expected to be greater than the depth of existing fills and disturbed soils beneath the proposed improvements. The deepest excavations anticipated for construction of an at-grade rail crossing at Jennings Avenue would be for extension of electrical conduits, which could require excavating down to approximately five feet below the ground surface in a previously disturbed area. Construction associated with closure of a rail crossing at W. Sixth, W. Seventh,

or W. Eighth Street is anticipated to require excavations less than three feet below the ground surface associated with removal of existing crossing surfaces. Because construction of the Preferred Project does not require excavations that would extend beyond artificial fills and previously disturbed soils, the potential to impact paleontological resources or unique geologic features is considered less than significant.

Following construction, operation of the Preferred Project would not require ground disturbance. Therefore, no operational impact to paleontological resources or unique geologic features would occur.

Mitigation: No mitigation is needed.

Analysis: *Rail Overcrossing Alternative (Significant)*

Construction and Operation

The results of a paleontological records search at the UCMP indicate that the study area for the Rail Overcrossing Alternative is not located within an area of a known fossil locality (Finger 2013). Therefore, construction of the Rail Overcrossing Alternative would not disturb a known fossil.

The natural geology of the area has a generally high paleontological sensitivity. Because the Rail Overcrossing Alternative is underlain by a geologic unit that has high paleontological sensitivity, and because subsurface excavations for the rail overcrossing would extend deeper than artificial fills and previously disturbed soils beneath the proposed improvements, the impact to a unique paleontological resource is considered potentially significant.

Following construction, operation of the Rail Overcrossing Alternative would not require ground disturbance. Therefore, no operational impact to paleontological resources or unique geologic features would occur.

Mitigation: **Mitigation Measure CR-3: Protect Paleontological Resources During Construction Activities *(Rail Overcrossing Alternative)***

The City shall stop all ground disturbing activities should any vertebrate fossils be encountered during construction. All ground disturbing activities within 50 feet of the find shall be temporarily halted, and a qualified paleontologist shall be notified to document the discovery as needed, to evaluate the potential resource, and to assess the nature and significance of the find. Based on the scientific value or uniqueness of the find, the paleontologist may record the find and allow work to continue, or recommend salvage and recovery of the material, if it is determined that the find cannot be avoided. The paleontologist shall make recommendations for any necessary treatment that is consistent with currently accepted scientific practices. Any fossils collected from the area shall then be deposited in an accredited and permanent scientific institution where they will be properly curated and preserved.

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

Mitigation Measure CR-3 would require that construction work associated with the Rail Overcrossing Alternative be temporarily halted or diverted in the event of a paleontological resource discovery, as well as avoidance or salvage of any

significant paleontological resources encountered during construction. Implementation of this mitigation measure reduces potential construction-related impacts on paleontological resources during construction of the Rail Overcrossing Alternative to a less-than-significant level.

Impact: **CR-4: Would the Project disturb any human remains, including those interred outside of formal cemeteries?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Rail Overcrossing Alternative (Significant)

Construction and Operation

An archaeological resources records search and field review did not indicate the presence of human remains within the study areas for the Preferred Project and the Rail Overcrossing Alternative. In addition, it is unlikely that undiscovered human remains are present within the construction areas for both the Preferred Project and the Rail Overcrossing Alternative given that the Project areas have been disturbed by previous development. However, the possibility of encountering human remains during construction cannot be completely discounted. Therefore, the impact related to the potential disturbance or damage of previously undiscovered human remains, if present, is considered significant.

Following construction, operation of the Preferred Project or the Rail Overcrossing Alternative would not require ground disturbance. Therefore, no operational impact to human remains would occur.

Mitigation: **Mitigation Measure CR-4: Protect Human Remains if Encountered During Construction *(Preferred Project and Rail Overcrossing Alternative)***

The City shall immediately notify the Sonoma County Coroner should human remains, associated grave goods, or items of cultural patrimony be encountered during construction, and the following procedures shall be followed as required by Public Resources Code § 5097.9 and Health and Safety Code § 7050.5. In the event of the coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission, which would appoint a Most Likely Descendant (MLD). A qualified archaeologist, the City and the MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of any human remains and associated or unassociated funerary objects. The agreement would take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, and final disposition of the human remains and associated or unassociated funerary objects.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Rail Overcrossing Alternative (Less than Significant with Mitigation)

Mitigation Measure CR-4 would require the City to adhere to appropriate notification, excavation, removal, recordation, analysis, custodianship, and final disposition protocols in the event that human remains were encountered during construction. Implementation of this mitigation measure would reduce potential impacts on any buried human remains and associated or unassociated funerary

objects that may be accidentally discovered during construction of the Preferred Project or Rail Overcrossing Alternative to a less-than-significant level.

3.4.7 Cumulative Impacts

Impact: **CR-C-1: Would the Project result in a cumulatively considerable contribution to a cumulative impact?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

Development within Santa Rosa may require grading and excavation that could potentially affect cultural and paleontological resources or human remains, or modify or demolish historic buildings/structures. If these resources are not protected, the cumulative effect of these projects would contribute to the continued loss of cultural resources. CEQA requirements for protecting cultural resources, human remains, and paleontological resources are applicable to development in throughout the City. As described above, studies were undertaken to ensure that cultural resources that could be impacted by Project implementation were identified and mitigation measures are put forth that would reduce impacts on archaeological and paleontological resources to a less-than-significant level. Therefore, the contribution of potential impacts from Project implementation to cumulative impact on archaeological, historical, and paleontological resources would be less than significant, and the Project's contribution to those impacts would not be cumulatively considerable.

Mitigation: No mitigation is needed.

3.4.8 References

Anthropological Study Center (ASC). 2014. *An Archaeological Study of the Jennings Avenue Bicycle and Pedestrian Crossing Santa Rosa, Sonoma County California. Sonoma State University*.

Finger, K. 2013. *Paleontological Records Search for Jennings Avenue Bicycle and Pedestrian Crossing EIR (GHD #02057-8410868), Santa Rosa, Sonoma County, California.*

Kay D. Weeks and Anne E. Grimmer, 1995. *The Secretary of the Interior's Standards for the Treatment of Historic Properties*,

Santa Rosa, City of. 2010. *City of Santa Rosa Downtown Pedestrian Access Improvement Project, Santa Rosa Street Furnishing Palette. Courthouse Square and Railroad Square.*

3.5 Geology and Soils

This section evaluates the potential impacts related to geology and soils during construction and operation of the Project. To provide the basis for this evaluation, the section provides an overview of the geologic setting that is applicable to Project. The evaluation section establishes thresholds of significance, evaluates potential geology and soil impacts, and describes appropriate mitigation measures, as necessary.

3.5.1 Impacts Evaluated in Other Sections

The following subjects are related to geology and soils, but are evaluated in other sections of this document:

- Potential impacts to water quality due to erosion, runoff or alteration of drainage patterns are evaluated in Section 3.8, Hydrology and Water Quality.

3.5.2 Setting

Descriptions in this section are based on reviews of published information, reports, and maps regarding regional and local topography and geology.

Geology and Topography

The City of Santa Rosa lies within the northeastern portion of the Cotati valley found along the Santa Rosa Plain and also includes part of the Sonoma Mountains to the east. The City is situated at the confluence of Matanzas Creek and Santa Rosa Creek, both of which originate from the Sonoma Mountains to the east. The Santa Rosa Plain slopes gently to the west, away from the uplands, toward the lowest elevations of Cotati Valley. Eastern valleys such as Rincon Valley and Bennett Valley are considered low intervening valleys at 200 to 300 feet above mean sea level with gentle slopes ranging from 0 to 15 percent (Santa Rosa 2009b).

In general, Santa Rosa is underlain by volcanic flow deposits known as the Sonoma Volcanics, sedimentary rocks known as the Petaluma Formation, and alluvial deposits. The Sonoma Volcanics formed during volcanic activity in the region approximately three to six million years ago and are generally found in the hilly upland areas. The Petaluma Formation is similar in age and consists of claystones, siltsones, and mudstones formed from the deposition of eroded materials in the upland areas. The alluvial deposits have been divided into the younger Huichica Formation and the Glen Ellen Formation, which consist of gravels, silt, sands, and clays found predominantly in the lower valley areas east of Santa Rosa. Recent alluvial sediments deposited after the aforementioned formations are divided into younger and older deposits. The older deposits are considered to be older alluvial fan deposits, dissected by river action, and consist of gravels from the nearby Rodgers Creek Fault Zone. The younger alluvial sediments consist of gravels, sands, silts, and clays. These deposits fill the valleys and originated from continued erosion of the upland areas. U.S. Geological Survey (USGS) has mapped the Project areas (Jennings Avenue and W. Sixth, W. Seventh, and W. Eighth Streets) as Qhf (alluvial fan and fluvial terrace deposits, undivided [Holocene] – Gravel) (USGS 2008a).

Soils

The U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) (formerly known as the Soil Conservation Service) has characterized the majority of soils in Santa Rosa as clayey alluvial soils and riverwash, as well as some silty and gravelly soils and loams. The most prominent soil type in the city is the Zamora silty clay loam found on 0 to 2 percent slopes,

although many other soil units are also mapped in the area including Arbuckle, Clear Lake, Guenoc, Haire Clays, Spreckles, Wright, and Yolo. Zamora soils are moderately permeable and exhibit slow runoff and slight susceptibility to erosion hazards. (Santa Rosa 2009b)

The NRCS has mapped the Jennings Avenue Project area as Zamora silty clay loam (ZaA) and the W. Sixth, W. Seventh, and W. Eighth Street areas as Yolo silt loam (YsA) (NRCS 2013). One geotechnical boring conducted at Jennings Avenue east of the rail corridor encountered seven feet of clay and gravel fill underlain by medium stiff to very stiff clay and medium dense clayey sand to the maximum depth explored of 42 feet (RGH 2014).

Seismicity

The San Francisco Bay Area contains both active and potentially active faults and is considered a region of high seismic activity.[1] The 2007 Working Group on California Earthquake Probabilities has evaluated the probability of one or more earthquakes of magnitude 6.7 or higher occurring in California over the next 30 years. The result of the evaluation indicated a 63 percent likelihood that such an earthquake event will occur in the Bay Area by the year 2038 (USGS 2008b). For Northern California, the combined Hayward-Rodgers Creek fault has the highest probability (31 percent in the next 30 years) for being the source of a magnitude 6.7 or higher seismic event. However, as shown in Table 3.5-1 (Active Faults near the Project Area), many of the other active faults in the region are also capable of causing significant groundshaking in the planning area (Santa Rosa 2009b).

Table 3.5-1 Active Faults near the Project Area

Fault	Distance and Direction from the Project	Maximum Moment Magnitude (Mw)
Rodgers Creek	Approximately 1.3 miles east	7.0
Maacama	12 miles northeast	7.1
San Andreas	18 miles west	7.9
West Napa	25 miles southeast	6.5
Hayward	30 miles south	7.1
Concord-Green Valley	24 miles east	6.9
Calaveras	60 miles south	6.8
San Gregorio-Hosgri Fault	70 miles southwest	7.3

Source: Santa Rosa 2009b

The Rodgers Creek fault is approximately 1.3 miles east of the Project area and is the closest fault to the Project. The San Andreas fault is a major structural feature in the region and forms a boundary between the North American and Pacific tectonic plates The Hayward-Rodgers Creek

[1] An “active” fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 10,000 years). A “potentially active” fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not, of course, mean that faults lacking evidence of surface displacement are necessarily inactive. “Sufficiently active” is also used to describe a fault if there is some evidence that Holocene displacement occurred on one or more of its segments or branches. (Santa Rosa 2009b)

and San Andreas fault systems are two principally active, Bay Area strike-slip-type faults that within the last 150 years have been responsible for historic earthquakes such as the memorable 1989 Loma Prieta earthquake in Santa Cruz associated with the San Andreas fault system. The Rodgers Creek fault is considered an extension of the Hayward fault and has experienced historic seismic events in 1969 and 1898. (Santa Rosa 2009b).

As shown on Table 3.5-1 (Active Faults near the Project Area), there are several other principal faults capable of producing groundshaking in Santa Rosa. The hazards associated with these regional active faults are related to the estimated potential magnitude of earthquakes that may occur on each fault. The estimated (moment) magnitudes shown in Table 3.5-1 (Active Faults near the Project Area) represent characteristic earthquakes on particular faults. While magnitude is a measure of the energy released in an earthquake, intensity is a measure of the groundshaking effects at a particular location. Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify groundshaking.

The Modified Mercalli (MM) intensity scale (see Table 3.5-2) is commonly used to measure earthquake effects due to ground shaking. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X could cause moderate to significant structural damage. Within the Project area, maximum ground shaking intensity resulting from an MM 7.0 earthquake generated on Rodgers Creek fault is anticipated to be Violent (IX) (ABAG 2013).

Seismic Hazards

Seismic hazards include those hazards that could reasonably be expected to occur at the Project site during a major earthquake on any of the Bay Area faults. Hazards vary in severity depending on the location, underlying materials, and level of ground shaking.

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude and nature of fault rupture can vary for different faults or even along different strands of the same fault. Surface rupture can damage or collapse buildings, cause severe damage to roads and pavement structures, and cause failure of overhead as well as underground utilities. As a result of the damage, buildings could become uninhabitable, roads could close, and utility service could be disrupted for an undetermined length of time. Ground rupture is typically confined to relatively narrow zones (a few feet to tens of feet wide) and considered more likely along active faults (listed in Table 3.5-1). An Alquist-Priolo Fault Rupture Hazard Zone, as designated through the Alquist-Priolo Earthquake Fault Zoning Act (discussed below), extends through downtown Santa Rosa approximately 1.3 miles east of the Project area, but does not cross the Project area (CDC 1983).

Table 3.5-2 Modified Mercalli Intensity Scale

Scale	Shaking Intensity Description
I.	Not felt. Marginal and long period effects of large earthquakes.
II.	Felt by persons at rest, on upper floors, or favorably placed.
III.	Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.
IV.	Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In the upper range of IV, wooden walls and frame creak.
V.	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.
VI.	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked. Small bells ring (church, school). Trees, bushes shaken (visibly, or heard to rustle).
VII.	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices (also unbraced parapets and architectural ornaments). Some cracks in masonry C. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.
VIII.	Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.
IX.	General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged. (General damage to foundations.) Frame structures, if not bolted, shifted off foundations. Frames racked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand craters.
X.	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.
XI.	Rails bent greatly. Underground pipelines completely out of service.
XII.	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.

Groundshaking

Earthquakes on the active faults (listed in Table 3.5-1) have the capacity to produce a range of ground shaking intensities at the Project sites. Ground shaking may affect areas hundreds of miles distant from an earthquake's epicenter. A major seismic event on one of these active faults could cause moderate (MM VI) to violent (MM IX) ground shaking at the Project sites (ABAG 2013). Violent ground shaking from an earthquake on the Rodgers Creek Fault could result in considerable damage, with buildings shifted off their foundations and underground pipes broken (Santa Rosa 2009b).

Ground motion during an earthquake is described by the parameters of acceleration and velocity as well as the duration of the shaking. A common measure of ground motion is the peak ground acceleration (PGA). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g)[2]. According to the USGS/CGS Probabilistic Seismic Hazard Assessment Model, peak ground acceleration in Santa Rosa could reach or exceed 0.63g (Santa Rosa 2009b). A probabilistic seismic hazard map represents the severity of groundshaking from earthquakes that geologists and seismologists agree could occur. It is “probabilistic” in the sense that the analysis takes into consideration the uncertainties in the size and location of earthquakes and the resulting ground motions that can affect a particular site and expresses the probability of exceeding a certain ground motion.

Liquefaction

Liquefaction is a phenomenon whereby unconsolidated and/or near-saturated soils lose cohesion and are converted to a fluid state as a result of severe vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in temporary, fluid-like behavior of the soil. Soil liquefaction causes ground failure that can damage roads, pipelines, underground cables and buildings with shallow foundations. Liquefaction can occur in areas characterized by water-saturated, cohesionless, granular materials at shallow depths, or in saturated unconsolidated or artificial fill sediments. Liquefaction potential is highest in areas underlain by loose fills, Bay Mud, and unconsolidated alluvium. The CGS has not investigated the Project site or surrounding area for potential designation as a Seismic Hazard Zone for liquefaction.

According to mapping compiled by the Association of Bay Area Governments (ABAG), the Project area has a “moderate” liquefaction potential (ABAG 2006). In 2014, RGH Consultants prepared a preliminary geotechnical report to investigate existing geology and soil conditions at the Jennings Avenue site. RGH’s preliminary liquefaction analysis included one geotechnical boring conducted at Jennings Avenue east of the rail corridor. The boring encountered potentially liquefiable soils in a clayey sand layer that extends from approximately 15 feet to 19 feet below ground surface. According to the RGH study, this layer would result in a “low” potential for bearing capacity failure (e.g., of a rail overcrossing) and “low” potential for liquefaction-induced lateral spreading (RGH 2014). At the Jennings site, minor liquefaction-induced subsidence due to the clayey sand layer encountered at 15 to 19 feet below ground surface (RGH 2014).

Geologic Hazards

Slope Failure and Landslides

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces. Earthquake motions can induce significant horizontal and vertical dynamic stresses in slopes that can trigger failure. Earthquake-induced landslides can occur in areas with steep slopes that are susceptible to strong ground motion during an earthquake.

Landslides may occur on slopes of 15 percent or less; however, the probability is greater on steeper slopes that exhibit old landslide features such as scarps, slanted vegetation, and transverse ridges. Landslides occur throughout the state of California, but the density of incidents

[2] Acceleration of gravity (g) = 980 centimeters per second squared. 1.0g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

increases in zones of active faulting. Slope stability can depend on a number of complex variables. A soil slope may be considered stable until it becomes saturated with water (e.g., during heavy rains or due to a broken pipe or sewer line). Cutting into the slope and removing the lower portion, or slope toe, can reduce or eliminate the slope support, thereby increasing stress on the slope. The Project area is relatively flat with the exception of the banks of Steele Creek. The Project area is identified as flat-land on ABAG's existing rainfall-induced landslide map (ABAG 1997), and is not identified as an area susceptible to landslide in the Santa Rosa General Plan (i.e., areas of relatively unstable rock on slopes greater than 15 percent, or previous failure) (Santa Rosa 2009a, Figure 12-3).

Subsidence

Subsidence (e.g., settlement) is the depression of the bearing soil when a load, such as that of a building or new fill material, is placed upon it. The preliminary geotechnical study determined that heterogeneous fills of unknown quality and unknown method of placement are present at the Jennings site and could settle and/or heave erratically under the load of new structures (RGH 2014). No load-bearing improvements are planned at W. Sixth Street, W. Seventh Street or W. Eighth Street sites.

Expansive Soils

Expansive soils possess a "shrink-swell" characteristic. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may occur over a long period of time due to expansive soils, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils.

The NRCS has mapped the Jennings Avenue Project area as Zamora silty clay loam (ZaA) and the W. Sixth, W. Seventh, and W. Eighth Street areas as Yolo silt loam (YsA) (NRCS 2013). Zamora soils have a moderate shrink-swell potential at a depth of 0 to 55 inches and a high shrink-swell potential at a depth from 55 to 60 inches. Yolo soils have a low to moderate shrink-swell potential at a depth of 0 to 60 inches (USDA 1972).

Soil Erosion

Soil erosion is a process whereby soil materials are worn away and transported to another area, either by wind or water. Rates of erosion can vary depending on the soil material and structure, placement, and human activity. Soil containing high amounts of silt can be easily eroded, while sandy soils are less susceptible. Excessive soil erosion can eventually damage building foundations and roadways. Erosion is most likely to occur on sloped areas with exposed soil, especially where unnatural slopes are created by cut-and-fill activities. Soil erosion rates can be higher during the construction phase. Typically, the soil erosion potential is reduced once the soil is graded and covered with concrete, structures, or asphalt. Soils in the Project area have moderate soil erosion/runoff potential, and, in general, grading or stockpiling activities during construction could result in soil erosion (NRCS 2013).

3.5.3 Regulatory Framework

Federal

There are no federal regulations pertaining to the Project.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. In accordance with this act, the State Geologist established regulatory zones, called "earthquake fault zones," around the surface traces of active faults and published maps showing these zones. Within these zones, buildings for human occupancy cannot be constructed across the surface trace of active faults. Because many active faults are complex and consist of more than one branch, each earthquake fault zone extends approximately 200 to 500 feet on either side of the mapped fault trace.

Title 14 of the California Code of Regulations (CCR), Section 3601(e), defines buildings intended for human occupancy as those that would be inhabited for more than 2,000 hours per year. The proposed Project area does not cross an Alquist-Priolo Earthquake Fault Zone (CDC 1983), and does not include buildings that meet this criterion for human occupancy. Therefore, the provisions of the act do not apply to the Project.

Seismic Hazards Mapping Act

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (Public Resources Code [PRC] Sections 2690 to 2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong groundshaking, liquefaction and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: the State is charged with identifying and mapping areas at risk of strong groundshaking, liquefaction, landslides, and other corollary hazards, with cities and counties required to regulate development within mapped Seismic Hazard Zones.

Under the California Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites within Seismic Hazard Zones until appropriate site-specific geologic and/or geotechnical investigations have been conducted and measures to reduce potential damage have been incorporated into the development plans. The CGS has not yet evaluated the Project site or surrounding area under the Seismic Hazards Mapping Act.

California Building Code

The California Building Code (CBC), which is codified in CCR Title 24, Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, egress facilities, and general building stability. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all building and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards.

The 2013 CBC references the 2010 edition of the American Society of Civil Engineers (ASCE) Minimum Design Loads for Buildings and Other Structures (ASCE 7-10) as the design basis for all structures. ASCE 7-10 has specific requirements for non-building structures. Chapter 15 of ASCE 7-10 specifies that non-building structures having specific seismic design criteria established in reference standards shall be designed using those standards. The only reference standard for pedestrian bridges is the American Association of State Highway and Transportation Officials

LRFD Guide Specifications for the Design of Pedestrian Bridges, December 2009 edition (AASHTO LRFD Guide Specifications for Pedestrian Bridges, 2009).

Regional and Local

City of Santa Rosa Municipal Code and Design and Construction Standards

Title 13 of the Santa Rosa Municipal Code sets standards for underground utility construction, and Title 18 addresses general building and construction practices requires construction in accordance with the California Building Code 2013 Edition. The City of Santa Rosa Design and Construction Standards are adopted by the City Council to specify how City facilities are to be constructed. They are divided into sections covering Streets, Traffic, Street Lights, Storm Drains, Water, Sewer, and Landscaping. The Standards, which contain design criteria as well as specifications and plans, are a reference for engineers preparing plans for construction and for contractors performing the construction of City streets, street and traffic lights, and storm drain, sewer, water and recycled water utilities.

City of Santa Rosa General Plan Goals and Policies

The following are the goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.

NS-C Prohibit development in high-risk geologic and seismic hazard areas to avoid exposure to seismic and geologic hazards.

NS-C-2 Require comprehensive geotechnical investigations prior to development approval, where applicable. Investigations shall include evaluation of landslide risk, liquefaction potential, settlement, seismically-induced landsliding, or weak and expansive soils. Evaluation and mitigation of seismic hazards, including ground shaking, liquefaction, and seismically-induced landslides, shall comply with guidelines set forth in the most recent version of the California Division of Mines and Geology (CDMG) Special Publication 117.

NS-C-3 Restrict development from areas where people might be adversely affected by known natural or manmade geologic hazards. Hazards might include unstable slopes, liquefiable soils, expansive soils or weak poorly engineered fills, as determined by a California registered geologist or engineer.

North Santa Rosa Station Area Specific Plan Goals and Policies

There are no goals or policies from the *North Santa Rosa Station Area Specific Plan* that are applicable to geology and soils.

Downtown Santa Rosa Station Area Specific Plan Goals and Policies.

There are no goals or policies from the *Downtown Santa Rosa Station Area Specific Plan* that are applicable to geology and soils.

3.5.4 Evaluation Criteria and Significance Thresholds

For the purposes of this EIR, the evaluation criteria and significance thresholds summarized in Table 3.5.3 (Evaluation Criteria and Significance Thresholds) are used to determine if the Project would have a significant effect related to geology and soils.

Table 3.5-3 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
GEO-1: Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking or seismic-related ground failure, including liquefaction?	Placement of above-grade reinforced structures at risk of collapse in an area with a mapped shaking severity level of "Strong", "Very Strong", "Violent" or "Very Violent". Placement of above-grade reinforced structures at risk of collapse in an area with a mapped liquefaction susceptibility of "Moderate" or higher. Non-conformance with recommendations of geotechnical studies. Non-conformance with applicable AASHTO Standards, Santa Rosa Municipal Code, and other applicable standards.	CEQA Guidelines Appendix G, Checklist Item VI (a ii, iii) Santa Rosa General Plan Goal NS-C and Policies NS-C-2 and NS-C-3
GEO-2: Would the Project result in substantial soil erosion or the loss of topsoil?	Location within areas with potential for erosion or loss of native top soil.	CEQA Guidelines Appendix G, Checklist Item VI (b)
GEO-3: Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in lateral spreading, subsidence, liquefaction or collapse?	Placement of above-grade reinforced structures at risk of collapse in an area with a mapped liquefaction susceptibility of "Moderate" "High" or "Very High" or non-conformance with geotechnical recommendations. Placement of structural foundations located where continuous layers of liquefiable soil extend to a free face, such as a creek bank. Placement of structural foundations in soils susceptible to settlement. Placement of structures in areas mapped as "many landslides," or "mostly landslides". Non-conformance with recommendations of site-specific geotechnical studies.	CEQA Guidelines Appendix G, Checklist Item VI (c) Santa Rosa General Plan Goal NS-C and Policies NS-C-2 and NS-C-3
GEO-4: Would the Project be located on expansive soil, creating substantial risks to life or property?	Placement of buildings or structures at risk of collapse in an area with a mapped shrink/swell potential of "High".	CEQA Guidelines Appendix G, Checklist Item VI (d) Santa Rosa General Plan Goal NS-C and Policies NS-C-2 and NS-C-3

Areas of No Project Impact

As explained below, construction or operation of the Project would not result in impacts related to two checklist questions contained in Appendix G of the current CEQA Guidelines. For the reasons presented below, the following evaluation criteria are not applicable to the Project.

- ***Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?***

  The proposed Project is not located within an active or potentially active fault zone, and is not located within a special studies zone identified on the Earthquake Fault Zone Map issued for the Santa Rosa Quadrangle (CDC 1983). Because the Project is not located within an active or potentially active fault zone, the potential for surface fault rupture is considered low. Therefore, this significance criterion is not applicable to the Project and is not discussed further.

- ***Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water*?**

  The proposed Project would not involve the construction or use of septic tanks or alternative wastewater disposal system. Therefore, this significance criterion is not applicable to the Project and is not discussed further.

3.5.5 Methodology

The descriptions of geology and soils in this section rely on information gathered from the USGS, the NRCS, the California Geologic Survey (CGS), the Association of Bay Area Governments (ABAG), and the preliminary geotechnical study completed for the Project. This section also incorporates previous research and analyses provided in the Santa Rosa 2035 General Plan, and Santa Rosa 2035 General Plan Draft EIR. This information was reviewed to determine relevant information for the EIR analysis. Project improvements are evaluated for their potential to be affected by, or to increase, risks associated with identified geologic and seismic hazards. Appropriate mitigation measures are identified for impacts determined to be significant.

3.5.6 Impacts and Mitigation Measures

Table 3.5-4 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.	
GEO-1: Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking or seismic-related ground failure, including liquefaction?	LS	LS	LS	LSM
GEO-2: Would the Project result in substantial soil erosion or the loss of topsoil?	LS	LS	LS	LS
GEO-3: Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in lateral spreading, subsidence, liquefaction or collapse?	LS	LS	LS	LSM
GEO-4: Would the Project be located on expansive soil, creating substantial risks to life or property?	LS	LS	LS	LSM
GEO-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to geology and soils?	NI	NI	NI	NI

Notes: NI = No Impact
LS = Less than Significant
LSM = Less than Significant with Mitigation

Impact: **GEO-1: Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking or seismic-related ground failure, including liquefaction?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

<u>Construction and Operation</u>

The Preferred Project would be located in an area that has been mapped as having “moderate” to “violent” shaking severity levels during an earthquake and “moderate” liquefaction susceptibility (ABAG 2013; ABAG 2006; RGH 2014).

Although the Preferred Project would meet the threshold for a significant impact for liquefaction, the at-grade rail crossing does not include reinforced buildings or structures that would be at risk of collapse due to ground shaking or seismically inducted ground failure and liquefaction, given that improvements would be completed at-grade.

Because the at-grade rail crossing and pathway at Jennings Avenue is intended solely for pedestrians and bicyclists, loads would be light. The Preferred Project would also include extension of an electrical conduit for a new street lamp along Jennings Avenue on the east side of the rail corridor. Utility extensions would be completed in accordance with applicable City standards and would not warrant a geotechnical analysis.

Similarly, closure of a rail crossing at W. Sixth, W. Seventh, or W. Eighth Street would not include new reinforced structures that would be at risk of collapse. Rather, improvements would include the removal of existing crossing surfaces, restoration of track ballast, and installation of bollards and fencing.

Because the Preferred Project would be required to comply with all applicable construction codes and regulations, and because the Preferred Project would not include structures at risk of collapse due to ground shaking, seismically-induced ground failure or liquefaction, the impact would be less than significant.

Mitigation**:** No mitigation is needed.

Analysis: *Rail Overcrossing Alternative (Significant)*

<u>Construction and Operation</u>

Similar to the Preferred Project, the Rail Overcrossing Alternative would be located in an area that has been mapped as having “moderate” to “violent” shaking severity levels during an earthquake (ABAG 2013). Because the Rail Overcrossing Alternative would be located in an area of elevated levels of seismic ground shaking, and because the Rail Overcrossing Alternative includes reinforced structures that would be at risk of collapse, the potential impact related to the risk of loss, injury, or death involving strong seismic ground shaking is significant.

The Rail Overcrossing Alternative would be located in an area that has been mapped as having “moderate” liquefaction susceptibility (ABAG 2006), which meets the significance threshold of “moderate” potential for liquefaction. One geotechnical boring conducted at Jennings Avenue east of the rail corridor encountered potentially liquefiable soils in a clayey sand layer that extends from approximately 15 feet to 19 feet below ground surface. According to a preliminary geotechnical study for the Rail Overcrossing Alternative, this layer of liquefiable soil would result in a low potential for bearing capacity failure; however, the geotechnical study provides recommendations to mitigate potential structural impacts due to the presence of liquefiable soils (RGH 2014). Therefore, because the overcrossing would be located in an area mapped as moderate liquefaction susceptibility, would include load-bearing above-grade structures, and because the preliminary geotechnical report included recommendations to mitigate impacts from liquefaction, the impact related to seismic-related ground failure from liquefaction would be significant.

Mitigation: **Mitigation Measure GEO-1: Conduct a Geotechnical Study and Implement Recommendations *(Rail Overcrossing Alternative)***

The City shall require a California registered Geotechnical Engineer to conduct a design-level geotechnical study for the Rail Overcrossing Alternative. The geotechnical study shall include in its study all areas of ground disturbance, evaluate seismic hazards and provide recommendations to mitigate the effect of: strong ground shaking; any liquefiable soils; and subsidence in adherence with applicable design standards, including applicable California Building Code (CBC) and City of Santa Rosa Building Code standards for earthquake resistant construction. The seismic criteria shall take into account the active faults in the Santa Rosa area and beyond, and ground motions and shaking related to the faults shall be accounted for. The geotechnical study shall include evaluation of unstable soils in the Project area, including areas susceptible to liquefaction or subsidence, and areas containing expansive soils.

The study shall provide measures to repair, stabilize, or avoid such soils, and include grading, drainage, paving, and foundation design recommendations such that adherence with current applicable standards for earthquake resistant construction would be achieved. This may include, but would not be limited to, one or more of the following measures or equivalent measures to meet the performance standards:

- If groundwater is encountered during drilling, dewatering holes and/or placement of concrete by the tremie[3] method may be necessary. If caving soils are encountered, it may be necessary to case the holes.
- If slabs or other structural elements are to be supported on shallow foundations, the heterogeneous fill shall be removed and replaced as an engineered fill.
- 2009 AASHTO seismic design criteria or other acceptable seismic design criteria shall be used for structures at the site.
- Structures supported on drilled piers may be used for foundations with the following limitations: 1) the liquefiable layer of approximately 15 feet to 19 feet below ground surface shall be neglected for the support of piers; 2) if liquefaction induced settlements on the order of 3/4 inch are acceptable, the piers do not need to gain support below the liquefiable layer; 3) if the piers gain support below the liquefiable layer, the piers, under seismic loading conditions, will need to be designed neglecting the upper 19 feet of soil and shall include drag down forces imposed by the upper 15 feet of soil that will settle during an earthquake.

The Rail Overcrossing Alternative shall be designed and constructed in conformance with the specific recommendations contained in the design-level geotechnical study, including recommendations for grading, ground improvement, and foundation support. The recommendations made in the geotechnical study shall be incorporated into the final plans and specifications and implemented during construction. Professional inspection of foundation and

[3] The tremie concrete placement method uses a pipe, through which concrete is placed below water level.

excavation, earthwork and other geotechnical aspects of site development shall be performed during construction in accordance with the current version of the CBC.

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

Implementation of Mitigation Measure GEO-1 would reduce potential significant impacts to the Rail Overcrossing Alternative from seismic ground shaking to a less-than-significant level by requiring a site-specific geotechnical study and design and construction in conformance with applicable design standards, such as 2009 AASHTO seismic design criteria or other acceptable criteria, that would reduce the risk to life or property during a seismic event.

Impact: **GEO-2: Would the Project result in substantial soil erosion or the loss of topsoil?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Construction

The Preferred Project involves construction of an at-grade pedestrian and bicycle crossing. This would require minimal grading and excavation to construct pathway improvements and install crossing equipment. Shallow trenching (i.e., approximately 30 inches) would be required to install an electrical conduit. Construction of the crossing closure at W. Sixth, W. Seventh, and W. Eighth Street would require even less soil disturbance to remove the existing asphalt and concrete, restore track ballast and railroad ties, and install a fence.

The Jennings Avenue site and W. Sixth, W. Seventh, or W. Eighth Street sites have been highly altered from their original, natural state. As a result, the depth and amount of grading and excavation proposed in the Preferred Project would result in little disturbance to native soils. As identified in Chapter 2, Project Description, during construction of the at-grade rail crossing, rip-rap, steel plates, or other type of stabilization measures, may be placed within a portion of Steele Creek in order to support construction equipment access and long-term pathway improvements over the existing storm drain box culvert. Stabilization measures would minimize erosion and loss of native top soil during construction. Additionally, Project Measure 3 (Implement Storm Water Control Measures during Construction) would be implemented during construction. Project Measure 3 requires contractors to implement a minimum set of best management practices (BMPs) during construction to prevent soil erosion such as silt fencing, sand bag barriers, and stabilized construction site entrances and exits, which would minimize erosion and the transport of soil offsite.

Because of the highly altered site conditions, the inclusion of stabilization measures to protect the banks of Steele Creek (if necessary), and implementation of BMPs in Project Measure 3 designed to minimize soil erosion and transport of soil offsite, no substantial loss of topsoil due to erosion or grading is anticipated during construction. The impact would be less than significant.

Operation

Following construction, there would be no additional ground disturbance. Finished surfaces at Jennings Avenue would be paved or concrete. At W. Sixth, W. Seventh and W. Eighth Street, finished surfaces would consist of track ballast. Following construction, exposed and disturbed areas would be restored. A native grass seed mix would be applied to areas disturbed outside the rail corridor. Therefore, impacts related to soil erosion and loss of topsoil would be less than significant.

Mitigation: No mitigation is needed.

Analysis: *Rail Overcrossing Alternative (Less than Significant)*

Construction

The Rail Overcrossing would require more significant grading and excavation than the Preferred Project. As currently designed, the overcrossing would require concrete foundations drilled to a depth of 68 feet. Several existing utilities would need to be relocated and storm drain improvements, new curb and gutter, and driveway extension would be constructed. Construction of these improvements would require clearing and grubbing, excavation for foundation and utility trenches, and grading for roadway reconfiguration and overcrossing construction.

The overcrossing construction area, including the rail corridor and Jennings Avenue, has been highly altered from its original, natural state. As a result, the depth and amount of grading and excavation proposed in the Rail Overcrossing Alternative would result in little disturbance to native soils. Rip-rap, steel plates, or other type of stabilization measures, may be placed within a portion of Steele Creek in order to support construction equipment access and long-term pathway improvements over the existing storm drain box culvert. Stabilization measures would minimize erosion and loss of native top soil during construction. Additionally, Project Measure 3 (Implement Storm Water Control Measures during Construction) would be implemented during construction. Project Measure 3 requires contractors to implement a minimum set of best management practices (BMPs) during construction to prevent soil erosion such as preservation of existing vegetation, installation of silt fencing and sand bag barriers, and stabilized construction site entrances and exits, which would minimize erosion, loss of top soil, and the transport of soil offsite.

Because of the highly altered site conditions, the inclusion of stabilization measures to protect the banks of Steele Creek (if necessary), and implementation of BMPs in Project Measure 3 designed to minimize soil erosion and transport of soil offsite, no substantial loss of topsoil due to erosion or grading is anticipated during construction. The impact would be less than significant.

Operation

Following construction, there would be no additional ground disturbance. Finished surfaces at Jennings Avenue would be paved or concrete. At W. Sixth, W. Seventh and W. Eighth Street, finished surfaces would consist of track

ballast. Following construction, exposed and disturbed areas would be restored. A native grass seed mix would be applied to areas disturbed outside the rail corridor. Therefore, impacts related to soil erosion and loss of topsoil would be less than significant.

Mitigation: No mitigation is needed.

Impact: GEO-3: Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Analysis: Preferred Project – At-grade Rail Crossing (Less than Significant)

Construction and Operation

Landslides

The Preferred Project is located in an area identified as "flat land" on ABAG's landslide map and is not identified as an area susceptible to landslide in the Santa Rosa General Plan (ABAG 1997; Santa Rosa 2009a, Figure 12-3). Construction and operation of the Preferred Project, including an at-grade rail crossing at Jennings Avenue and a rail crossing closure at W. Sixth, W. Seventh, or W. Eighth Street would not be susceptible to or result in an off-site landslide. Therefore, because the Preferred Project is located in an area of relatively flat topography that is not susceptible to slope instability, no impact from exposure to landslides would occur.

Liquefaction, Lateral Spreading, Subsidence, and Collapse

As described under Impact GEO-1, the Jennings Avenue and W. Sixth, W. Seventh, and W. Eighth Street areas are mapped as moderately susceptible to liquefaction (ABAG 2006; RGH 2014). However as described previously, the Preferred Project would not include above-grade structures susceptible to collapse due to the presence of liquefiable soils. Additionally, the Preferred Project would be required to be designed and constructed in accordance with all applicable construction codes and standards (e.g., CBC and City standards). The impact from liquefaction and liquefaction-induced collapse would be less than significant.

Lateral spreading can occur where continuous layers of liquefiable soil extend to a free face, such as a creek bank. Because there are no continuous layers of liquefiable soil and no creek bank free faces at the depth of liquefiable soil layers, the potential impact for liquefaction-induced lateral spreading at the site is low (RGH 2014), and the impact would be less than significant.

RGH's preliminary geotechnical study determined that heterogeneous fills present at the Jennings site could settle and/or heave erratically under the load of new structures (RGH 2014). However, no load-bearing improvements are planned as part of the Preferred Project at either the Jennings Avenue site or W. Sixth, W. Seventh and W. Eighth Streets, therefore subsidence is not anticipated and the impact would be less than significant.

Mitigation: No mitigation is needed.

Analysis: *Rail Overcrossing Alternative (Significant)*

<u>Construction and Operation</u>

Landslides

As described previously, the Jennings Avenue site is not susceptible to a landslide. The site is located in an area of relatively flat topography, and construction would not result in an off-site landslide or be at risk from landslide-related ground displacements. The impact would be less than significant.

Liquefaction, Lateral Spreading, Subsidence, and Collapse

As described under Impact GEO-1, the Rail Overcrossing Alternative would be located in an area that has been mapped as having “moderate” liquefaction susceptibility (ABAG 2006), which meets the significance threshold of “moderate” potential for liquefaction. One geotechnical boring conducted at Jennings Avenue east of the rail corridor encountered potentially liquefiable soils in a clayey sand layer that extends from approximately 15 feet to 19 feet below ground surface. According to a preliminary geotechnical study for the Rail Overcrossing Alternative, this layer of liquefiable soil would result in a low potential for bearing capacity failure; however, the geotechnical study provides recommendations to mitigate potential structural impacts due to the presence of liquefiable soils (RGH 2014). Therefore, because the overcrossing would be located in an area mapped as moderate liquefaction susceptibility, would include load-bearing above-grade structures, and because the preliminary geotechnical report included recommendations to mitigate impacts from liquefaction, the impact related to liquefaction and collapse would be significant.

Lateral spreading can occur where continuous layers of liquefiable soil extend to a free face, such as a creek bank. Because there are no continuous layers of liquefiable soil and no creek bank free faces at the depth of liquefiable soil layers, the potential impact for liquefaction-induced lateral spreading at the site is low (RGH 2014) and the impact would be less than significant.

RGH’s preliminary geotechnical study determined that heterogeneous fills present at the Jennings site could settle and/or heave erratically under the load of new structures and differential settlement could (RGH 2014). Because the overcrossing would be a load-bearing structure, the potential impact due to differential settlement and subsidence would be significant.

Mitigation: **Mitigation Measure GEO-1: Conduct a Geotechnical Study and Implement Recommendations *(Rail Overcrossing Alternative)***

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

Implementation of Mitigation Measure GEO-1 would reduce potential significant impacts to the Rail Overcrossing Alternative from liquefaction, liquefaction-induced collapse and subsidence to a less-than-significant level by requiring a design-level geotechnical study and conformance with applicable design standards such as replacing heterogeneous fill with engineered fill to reduce the risk to life or property due to liquefaction and subsidence.

Impact: **GEO-4: Would the Project be located on expansive soil, creating substantial risks to life or property?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Construction and Operation

The NRCS has mapped the Jennings Project area as Zamora silty clay loam (ZaA) and the W. Sixth, W. Seventh, or W. Eighth Street area as Yolo silt loam (YsA) (NRCS 2013). Zamora soils have a moderate shrink-swell potential at a depth of 0 to 55 inches and a high shrink-swell potential at a depth from 55 to 60 inches. Yolo soils have a low to moderate shrink-swell potential at a depth of 0 to 60 inches (USDA 1972). The Preferred Project would include shallow excavation (up to 30 inches deep). At this depth, Zamora and Yolo soils have a moderate shrink-swell potential, which is below the significance threshold for expansive soils. The impact to the Preferred Project due to expansive soils would be less than significant.

Mitigation: No mitigation needed.

Analysis: *Rail Overcrossing Alternative (Significant)*

Construction and Operation

As described previously, the Jennings Avenue is mapped as containing Zamora soils with a moderate shrink-swell potential at a depth of 0 to 55 inches and a high shrink-swell potential at a depth from 55 to 60 inches. Expansive soils can damage and stress structures and buried utilities and increase maintenance requirements. The Rail Overcrossing Alternative would include trenching at approximate depths of five to six feet and foundation piers at depths up to 68 feet. The overcrossing foundations could be susceptible to damage due to expansive soils. The impact would be significant.

Mitigation: **Mitigation Measure GEO-1: Conduct a Geotechnical Study and Implement Recommendations *(Rail Overcrossing Alternative)***

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

Implementation of Mitigation Measure GEO-1 would reduce potential significant impacts from expansive soils to a less-than-significant level by requiring design and construction of the Rail Overcrossing Alternative in conformance with recommendations from a geotechnical study and applicable design standards that would reduce the risk of damage to the overcrossing structural foundations, underground utilities and other improvements.

3.5.7 Cumulative Impacts

Impact: **GEO-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to geology and soils?**

Analysis: *Preferred Project – At-grade Rail Crossing (No Impact)*

Rail Overcrossing Alternative (No Impact)

The nature of geologic impacts is site-specific. Therefore, geologic hazards do not accumulate as impacts on resources do, as indicated in other sections of this

EIR. With compliance with State and local regulations and policies, construction would be consistent with current building standards for seismic and geologic hazards. Therefore, the Project could not contribute to a cumulative impact. No significant cumulative impacts would occur.

3.5.8 References

Association of Bay Area Governments (ABAG).1997. *Summary Distribution of Slides and Earth Flows in the San Francisco Bay Region.* Website Accessed December 11, 2013 at: http://quake.abag.ca.gov/landslides/

ABAG. 2006. *Liquefaction Susceptibility Map*. Accessed November 18, 2013 at http://quake.abag.ca.gov.

ABAG. 2010. *Taming Natural Disasters, Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, 2010 Update of 2005 Plan*.

ABAG. 2013. *Hazard Maps, Earthquake Shaking Scenarios (Hayward and Rodgers, Maacama, San Andreas, West Napa, Southern and Northern Hayward, Concord Green Valley, and San Gregorio faults)*. Website Accessed November 18, 2013 at: http://gis3.abag.ca.gov/Website/Shaking-Maps/viewer.htm

California Department of Conservation, Division of Mines and Geology. 1983. *Special Studies Zone, Santa Rosa Quadrangle*. July 1.

Natural Resources Conservation Service (NRCS). 2013. *Web Soil Survey*. Accessed November 18, 2013 at http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

RGH Consultants. 2014. *Preliminary Geotechnical Study, Jennings Avenue Pedestrian Crossing, Santa Rosa, California*. April 9.

Santa Rosa, City of (Santa Rosa). 2009a. *City of Santa Rosa General Plan 2035*. November.

Santa Rosa. 2009b. *Santa Rosa General Plan 2035, Environmental Impact Report.* March.

U.S. Geological Survey (USGS). 2008a. *Geologic and Geophysical Framework of the Santa Rosa 7.5' Quadrangle, Sonoma County, California*.

USGS. 2008b. *The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2).*

U.S. Department of Agriculture. 1972. *Soil Survey for Sonoma County, California.*

3.6 Greenhouse Gas Emissions

This section evaluates the potential impacts related to greenhouse gas emissions during construction and operation of the Project. The impacts and mitigation measures section establishes the thresholds of significance, evaluates greenhouse gas impacts, and identifies the significance of impacts. Where appropriate, mitigation is presented to reduce impacts to less-than-significant levels.

3.6.1 Impacts Evaluated in Other Sections

The following subjects are related to greenhouse gas emissions, but are evaluated in other sections of this document:

- Potential impacts to air quality are addressed in Section 3.2, Air Quality.
- Potential energy implications are addressed in Chapter 5.0, Other CEQA-required Sections.

3.6.2 Setting

Gases that trap heat in the atmosphere are referred to as greenhouse gases because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse. The accumulation of greenhouse gases has been implicated as the driving force for global climate change. The primary greenhouse gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and water vapor (H_2O).

While greenhouse gases in the atmosphere are naturally occurring, the emission rate of CO_2, CH_4 and N_2O has been accelerated by human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with such activities as agricultural practices and landfills. Other greenhouse gases include hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride, which are generated during certain industrial processes. Greenhouse gases are typically reported in “carbon-dioxide-equivalent” measures (CO_2e) as each greenhouse gas has a different global warming potential.

There is international scientific consensus that human-caused increases in greenhouse gases have contributed, and will continue to contribute, to climate change (NASA 2014). Potential climate change impacts in California may include, but are not limited to, a decrease in snowpack; sea level rise; and a greater number of extreme heat days per year, high ozone days, large forest fires, and drought years. Secondary effects are likely to include impacts on agriculture, changes in disease vectors, and changes in habitat and biodiversity (ARB 2014).

The Environmental Protection Agency (EPA) reports U.S. greenhouse gas emissions for 2011 as 6,702 million metric tons of CO_2e (MMT CO_2e). Electricity production accounted for approximately 33 percent of national greenhouse gas emissions, followed by the transportation sector at approximately 28 percent and the industrial sector at approximately 20 percent. Commercial and residential fuel use and the agricultural sector accounted for the remaining 19 percent (U.S. EPA 2013).

The California Air Resources Board (ARB) estimated that in 2011 California produced about 448 MMT CO_2e. The transportation sector was the highest source at 38 percent of the State’s total greenhouse gases, followed by the industrial sector at 22 percent, and electricity generation (both in-state and out-of-state) at 19 percent. Commercial and residential fuel use, recycling and waste, high global warming potential, and agricultural sectors accounted for the remaining 21 percent of the State’s total greenhouse gas emissions (ARB 2013).

The City of Santa Rosa reported community emissions for 2007 as 1.3 MMT CO_2e. Fifty-one percent came from the transportation sector, followed by 35 percent from the energy sector, with the remaining 14 percent coming from solid waste, stationary sources, water and wastewater, off-road, and agriculture (Santa Rosa 2012a).

3.6.3 Regulatory Framework

State

In 2005, the Governor signed Executive Order S-3-05 which established greenhouse gas emission reduction targets to reduce emissions to 2000 levels by 2010, reduce emissions to 1990 levels by 2020, and reduce emissions to 80 percent below 1990 levels by 2050. The Secretary of the California Environmental Protection Agency (Secretary) was designated to coordinate oversight of the efforts made to meet the targets with the Business, Transportation and Housing Agency, the Department of Food and Agriculture, the Resources Agency, the Air Resources Board, the Energy Commission, and the Public Utilities Commission. The Secretary reports to the Governor and State Legislature biannually on the impacts to California from global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The most recent report, Safeguarding California: Reducing Climate Risk Public Draft, was released in December 2013.

In 2006, the Governor signed AB32, the “Global Warming Solutions Act of 2006,” committing the State of California to reducing greenhouse gas emissions to 1990 levels by 2020. The statute requires ARB to track emissions through mandatory reporting, determine the 1990 emission levels, set annual emissions limits that will result in meeting the 2020 target, and design and implement regulations and other feasible and cost effective measures to ensure that statewide greenhouse gas emissions will be reduced to 1990 levels by 2020.

In December 2007, ARB approved the 2020 emissions limit at 427 MMT CO2e. Projected business-as-usual emissions for 2020 are 507 MMT CO2e. Therefore, a reduction of 80 MMT CO_2e is needed to meet the goal (ARB 2012).

In December 2008, pursuant to AB 32, ARB adopted the *Climate Change Scoping Plan*, which outlined measures to attain the 2020 greenhouse gas emissions limit. The *Climate Change Scoping Plan* estimated that implementation of identified measures would result in a reduction of 105.3 MMT CO_2e from various sectors including transportation, energy, forestry, and high global warming potential gas sectors (originally reported as 174 MMT CO_2e, but updated to 105.3 MMT CO_2e in the *Status of Scoping Plan Recommended Measures* [found at the ARB website]). This is 24 percent more than is needed to meet the 2020 mandate.

In May 2014, ARB released the *First Update to the Climate Change Scoping Plan* which describes the progress made to meet the near-term (2020) objectives of AB 32 and defines California’s climate change priorities and activities for the next several years (ARB 2014). The Plan also updated the 2020 emissions limit and business-as-usual emissions for 2020. The 2020 limit is now 431 MMT CO_2e and the business-as-usual forecast is 509 MMT CO_2e. Finally, the plan provides recommendations for establishing a mid-term emissions limit that aligns with the long-term (2050) goals of Executive Order S-3-05. The recommendations cover the energy, transportation, agriculture, water, waste management, natural and working lands, short-lived climate pollutants, green building, and cap-and-trade sectors.

Regional and Local

The Bay Area Air Quality Management District (BAAQMD) CEQA Air Quality Guidelines (2011) have established greenhouse gas thresholds of significance in order to meet the goals of AB 32.

The BAAQMD Guidelines contain the following operational thresholds: compliance with a Qualified GHG Reduction Strategy; or 1,100 metric tons (MT) of CO_2e per year; or 4.6 MT CO_2e per service population (residents plus employees) per year. The BAAQMD Guidelines do not provide construction thresholds of significance for greenhouse gas emissions.

In June 2012, the City of Santa Rosa adopted a community *Climate Action Plan* (CAP) which examines community-wide sources of greenhouse gas emissions, identifies reduction targets, and outlines strategies for reducing emissions. The CAP meets Bay Area Air Quality Management District expectations for a Qualified GHG Reduction Strategy (Santa Rosa 2012a). According to the *Bay Area Air Quality Management District CEQA Air Quality Guidelines*, a project that is consistent with an adopted qualified greenhouse gas reduction strategy can be presumed to have less-than-significant greenhouse gas emission impacts.

In August 2013, the City adopted the *Municipal Operations Climate Action Plan* (MOCAP). The MOCAP identifies strategies and projects that can be used by the City to meet municipal greenhouse gas emission reduction targets established by the City. The strategies and projects cover eight sectors: wastewater operations, fleet, buildings and facilities, employee commute, public lighting, water operations, waste stream, and equipment. None of the strategies relate to the Project.

City of Santa Rosa General Plan Goals and Policies

The Greenhouse Gas Appendix of the *Santa Rosa General Plan 2035* lists all the goals and policies in the General Plan that are considered to reduce greenhouse gas emissions. The following goals and policies, taken from the Greenhouse Gas Appendix, are those that are applicable to the Project.

T-J-1 Pursue implementation of walking and bicycling facilities as envisioned in the city's Bicycle and Pedestrian Master Plan.

T-K Develop a safe, convenient, and continuous network of pedestrian sidewalks and pathways that link neighborhoods with schools, parks, shopping areas, and employment centers.

T-K-1 Link the various citywide pedestrian paths, including street sidewalks, downtown walkways, pedestrian areas in shopping centers and work complexes, park pathways, and other creekside and open space pathways.

T-L-3 Improve bicycle networks by finishing incomplete or disconnected bicycle routes.

North Santa Rosa Station Area Specific Plan Goals and Policies

There are no goals or policies in the *North Santa Rosa Station Area Specific Plan* that are applicable to the Project as it relates to greenhouse gas emissions. However, 12 guiding project principles were used to develop the detailed goals, policies, and implementation strategies of the Plan. Guiding Project Principle 10 states: "Reduce greenhouse gas emissions by promoting sustainable transit-oriented development and practical alternative modes of transport to the automobile." In addition, in Chapter 7 Public Realm Design Standards and Guidelines, there are "green" design standards for public improvements. The following standard would apply to the project and be indirectly related to greenhouse gas emissions:

- Lamps should be energy-efficient, utilizing LED lamps or induction lighting when available.

Downtown Station Area Specific Plan Goals and Policies

There are no goals or policies in the *Downtown Station Area Specific Plan* that are applicable to the Project as it relates to greenhouse gas emissions.

3.6.4 Evaluation Criteria and Significance Thresholds

Table 3.6-1 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
GG-1: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Conflict with *Climate Action Plan*, a Qualified Greenhouse Gas Reduction Strategy	BAAQMD CEQA Air Quality Guidelines (BAAQMD 2011) Climate Action Plan (Santa Rosa 2012a)
GG-2: Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Conflict with the State's *First Update Climate Change Scoping Plan* Conflict with *Santa Rosa General Plan 2035*	First Update Climate Change Scoping Plan (ARB 2014) Santa Rosa General Plan 2035 (Santa Rosa 2009)

3.6.5 Methodology

Potential impacts to greenhouse gas emission are evaluated qualitatively for both construction and operational activities. The Project is evaluated for its compliance with the City's CAP, as a Qualified GHG Reduction Strategy, and the State's *First Update Climate Change Scoping Plan* and the *Santa Rosa General Plan 2035* as the two plans adopted for the purpose of reducing greenhouse gas emissions which also are applicable to the Project. Because the CAP also addresses emissions from construction, both operation and construction impacts from the Project are evaluated for their compliance with the CAP. Although the MOCAP also was adopted for the purpose of reducing greenhouse gas emissions as noted in the Setting, none of the reduction strategies identified in that Plan pertain to the Project, therefore the MOCAP is not included in the analysis further.

3.6.6 Impacts and Mitigation Measures

Table 3.6-2 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.	
GG-1: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	LSM	LS	LS	LS
GG-2: Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	LSM	NI	NI	NI
GG-C-1: Would the Project result in a cumulatively considerable contribution to a significant cumulative impact relative to greenhouse gas emissions?	LSM	LS	LS	LS

Notes: NI = No Impact
LS = Less than Significant
LSM = Less than Significant with Mitigation

Impact: **GG-1: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

Analysis: *Preferred Project – At-grade Rail Crossing with closure at W. Seventh Street or W. Eight Street (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

Construction

There are two measures in the CAP that are applicable to construction of the Project: Measure 1.4, Tree Planting and Urban Forestry, and Measure 9.2, Construction Emissions.

Under Measure 1.4, the CAP includes Action 1.4.2, which calls for implementing the City's tree preservation ordinance contained in Chapter 17-24 of the City Code. Both the Preferred Project and the Rail Overcrossing Alternative would require the removal of one or more trees that qualify as heritage and/or protected in Chapter 17-24 of the City Code. As required by the City Code and with implementation of Mitigation Measure BIO-5a, Compliance with Santa Rosa Tree Ordinance, both the Preferred Project and the Rail Overcrossing Alternative would comply with the City's Tree Ordinance and therefore comply with the CAP.

Under Measure 9.2, the CAP seeks to reduce emissions from construction equipment. The implementing actions for Measure 9.2 are Actions 9.2.1, 9.2.2, and 9.2.3, which are intended to reduce emissions from construction equipment

by limiting idling, properly maintaining equipment, and utilizing cleaner fuels, equipment, and vehicles. Construction of the Project would emit greenhouse gas emissions from off-road mobile sources (construction equipment) and on-road mobile sources (worker trips, truck trips delivering supplies and equipment). As summarized in Chapter 2, Project Description, Section 2.6 (Project Measures), implementation of Project Measure 2 (Implement GHG Control Measures during Construction), is included as part of the Project. Project Measure 2 requires compliance with Actions 9.2.1, 9.2.2, and 9.2.3 to reduce emissions from construction activities. With implementation of Project Measure 2, construction activities associated with the Preferred Project and the Rail Overcrossing Alternative would comply with Measure 9.2 of the CAP.

Because the City's CAP is a Qualified Greenhouse Gas Reduction Strategy, and because the Project would not conflict with the City's adopted CAP, Project impacts on greenhouse gas emissions as a result of Project construction would be less than significant.

<u>Operation</u>

There is one measure in the CAP that is applicable to the operation of the Project: Measure 4.1, Bicycle and Pedestrian Network. The implementing action of Measure 4.1 is Action 4.1.1 Implement the Bicycle and Pedestrian Master Plan. The *Bicycle and Pedestrian Master Plan* (Santa Rosa 2010) identifies Jennings Avenue as a future bicycle boulevard where it crosses the rail corridor. Implementation of both the Preferred Project and the Rail Overcrossing Alternative would help implement Measure 4.1 of the CAP by establishing a pedestrian and bicycle rail crossing. Therefore, both the Preferred Project and the Rail Overcrossing Alternative would comply with the CAP, and impacts on greenhouse gas emissions as a result of Project operation would be less than significant.

Both the Preferred Project and the Rail Overcrossing Alternative would use a negligible amount of energy for lighting, warning signals, and/or gate arms. For the Preferred Project, a portion of this energy may be offset from the removal of gate arms at one of the rail crossings at either W. Sixth Street, W. Seventh Street, or W. Eighth Street. Although the CAP does not address new lighting infrastructure, the CAP does include an action to retrofit existing energy intensive streetlights with energy efficient fixtures such as LED or induction. The Project would incorporate appropriate energy efficient lighting fixtures into the design of both the Preferred Project and the Rail Overcrossing Alternative. For example, the Rail Overcrossing Alternative would utilize recessed LED pathway lighting meeting the requirements of Title 24 of the California Code of Regulations for outdoor, non-residential lighting use and design. Therefore, the Project would be consistent with the intent of Action 1.2.7 which calls for the City to reduce energy in all City facilities, including streetlights.

Analysis: *Preferred Project – At-grade Rail Crossing with Closure at W. Sixth Street (Significant)*

W. Sixth Street near the rail corridor is designated as a proposed bicycle boulevard in the *Bicycle and Pedestrian Master Plan*. A closure at W. Sixth

Street would conflict with the route of the proposed bicycle boulevard. The Preferred Project with a closure at W. Sixth Street would therefore conflict with Action 4.1.1 of the CAP. This would be a significant impact.

The analysis and conclusions for the at-grade crossing portion of the Preferred Project is the same as described above for the Preferred Project with closure at either W. Seventh Street or W. Eighth Street. There would be no conflict with this portion of the Project.

Mitigation: **Mitigation Measure TR-3: Revise Proposed Bicycle Route on Sixth Street *(Preferred Project with Closure at W. Sixth Street)***

This mitigation measure is defined in Impact TR-4 of Section 3.12, Transportation.

After Mitigation: *Preferred Project – At-grade Rail Crossing with Closure at W. Sixth Street (Less than Significant with Mitigation)*

Implementation of Mitigation Measure TR-3 would require the City to amend the *Bicycle and Pedestrian Master Plan* to revise the route of the proposed bicycle boulevard at W. Sixth Street. Similar to the existing proposed route, the route required in the mitigation measure would connect pedestrians and bicyclists from the Santa Rosa Creek pathway to downtown. Although there would be a slight deviation in routing, implementation of the mitigation measure would provide a similar connection to downtown. The impact would be less than significant with implementation of Mitigation Measure TR-3.

Impact: GG-2: Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Analysis: Preferred Project – At-grade Rail Crossing with closure at W. Seventh Street or W. Eighth Street (No Impact)

Rail Overcrossing Alternative (No Impact)

This section evaluates the Project's potential to conflict with the *First Update Climate Change Scoping Plan* and the *City of Santa Rosa General Plan 2035*.

First Update Climate Change Scoping Plan

The Project does not conflict with this statewide policy document. The recommended next steps in the *First Update Climate Change Scoping Plan* are broad policy and regulatory initiatives that will be implemented at the State level and do not relate to the construction and operation of small individual infrastructure projects such as the Project. No impact would occur.

City of Santa Rosa General Plan 2035

As noted in the setting section above, the *Santa Rosa General Plan 2035* includes goals and policies established for the purpose of reducing greenhouse gas emissions. One goal and three policies (T-J-1, T-K, T-K-1, and T-L-3; see full text provided in setting section above) in the General Plan are applicable to the Project. Goal T-K relates to developing safe and continuous network pathways that link neighborhoods with schools and services. The policies relate to creating

pedestrian linkages, improving the bicycle network, and implementing the facilities identified in the *Bicycle and Pedestrian Master Plan*. As noted under Impact GG-1, the *Bicycle and Pedestrian Master Plan* identifies Jennings Avenue as a future bicycle boulevard where it crosses the rail corridor for the purpose of providing a safe linkage between the neighborhoods and school on the west side of the rail corridor with the neighborhoods and services on the east side. The Project would not conflict with the policies of the *Santa Rosa General Plan 2035*, and no impact would occur.

Although the *North Santa Rosa Station Area Specific Plan* was not adopted for the purpose of reducing greenhouse gases, it does have a discussion of “guiding principles” and a “design development standard” which could be interpreted to apply to the Project. The applicable guiding principle is to reduce greenhouse gas emissions by promoting alternative modes of transport. The *North Santa Rosa Station Area Specific Plan* identifies Jennings Avenue as a bicycle boulevard. As the Project implements a portion of this vision for the Plan area, it would not conflict with the guiding principle. As for the design standard, utilizing LED lamps, as noted in the Project Description LED, recessed lighting would be used for the pathways.

Implementation of the Preferred Project (with closure at W. Seventh Street or W. Eighth Street) and the Rail Overcrossing Alternative would meet the intent of all of these plans and policies. No impact would occur

Analysis: *Preferred Project – At-grade Rail Crossing with Closure at W. Sixth Street (Significant)*

W. Sixth Street at the Project location is designated as a proposed Class II bike route in the *Santa Rosa General Plan 2035* and the *Downtown Station Area Specific Plan*, and a proposed bicycle boulevard in the *Bicycle and Pedestrian Master Plan*. Closure at W. Sixth Street would conflict with the route of the Class II bike route/bicycle boulevard. The Preferred Project with closure at W. Sixth Street would conflict with the *Santa Rosa General Plan 2035, the Downtown Station Area Specific Plan, and the Bicycle and Pedestrian Master Plan* and therefore would be a significant impact.

The analysis and conclusions for the At-grade Rail Crossing portion of the Preferred Project is the same as described above for the Preferred Project with closure at either W. Seventh Street or W. Eighth Street. There would be no conflicts with this portion of the Project.

Mitigation: **Mitigation Measure TR-3: Revise Proposed Bicycle Route on Sixth Street *(Preferred Project with Closure at W. Sixth Street)***

This mitigation measure is defined in Impact TR-4 of Section 3.12, Transportation.

After Mitigation: *Preferred Project – At-grade Rail Crossing with Closure at W. Sixth Street (Less than Significant with Mitigation)*

Implementation of Mitigation Measure TR-3 would require the City to amend the Santa Rosa General Plan 2035, the Downtown Station Area Specific Plan and the Bicycle and Pedestrian Master Plan to provide an alternate bicycle route to

replace the bicycle route at W. Sixth Street. Similar to the existing proposed route, the route required in the mitigation measure would connect pedestrians and bicyclists from the Santa Rosa Creek pathway to downtown. Although there would be a slight deviation in routing, implementation of the mitigation measure would provide a similar connection to downtown. The impact would be less than significant with implementation of Mitigation Measure TR-3.

3.6.7 Cumulative Impacts

Impact: **GG-C-1: Would the Project result in a cumulatively considerable contribution to a significant cumulative impact relative to greenhouse gas emissions?**

Preferred Project – At-grade Rail Crossing with closure at W. Seventh Street or W. Eighth Street (Less than Significant)

Preferred Project – At-grade Rail Crossing with closure at W. Sixth Street (Significant)

Rail Overcrossing Alternative (Less than Significant)

Greenhouse gas emissions, by their nature, represent a cumulative impact. No single project could generate enough greenhouse gas emissions to noticeably change the global average temperature. Instead, greenhouse gas emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change. Therefore, the Project analysis presented above represents the cumulative analysis for impacts from greenhouse gas emissions. According to the BAAQMD CEQA Air Quality Guidelines, if a project would generate greenhouse gas emissions above the BAAQMD threshold level, it would be considered to contribute substantially to a cumulative impact, and would be considered significant. The Project analysis above found that impacts to greenhouse gas emissions from the Preferred Project with Closure at W. Seventh Street or W. Eighth Street and the Rail Crossing Alternative would be less than significant, and the impacts from the Preferred Project with Closure at W. Sixth Street would be less than significant after mitigation.

Mitigation: **Mitigation Measure TR-3: Revise Proposed Bicycle Route on Sixth Street *(Preferred Project with Closure at W. Sixth Street)***

This mitigation measure is defined in Impact TR-4 of Section 3.12, Transportation.

After Mitigation: *Preferred Project – At-grade Rail Crossing with Closure at W. Sixth Street (Less than Significant with Mitigation)*

Implementation of Mitigation Measure TR-3 would require the City to amend the Santa Rosa General Plan 2035, the Downtown Station Area Specific Plan and the Bicycle and Pedestrian Master Plan to provide an alternate bicycle route to replace the bicycle route at W. Sixth Street. Similar to the existing proposed route, the route required in the mitigation measure would connect pedestrians and bicyclists from the Santa Rosa Creek pathway to downtown. Although there would be a slight deviation in routing, implementation of the mitigation measure

would provide a similar connection to downtown. The impact would be less than significant with implementation of Mitigation Measure TR-3.

3.6.8 References

Air Resources Board (ARB). 2012. *Status of Scoping Plan Recommended Measures*. Website accessed at: http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf

ARB. 2013. *California Greenhouse Gas Inventory for 2000-2011*. August.

ARB. 2014. *First Update to the Climate Change Scoping Plan: Building on the Framework*. May.

California, State of. 2005. *Executive Order S-03-05.*

National Aeronautics and Space Administration (NASA). 2014. *Consensus: 97% of Climate Scientists Agree*. Website Accessed on August 11 at: http://climate.nasa.gov/scientific-consensus/.

Santa Rosa, City of (Santa Rosa). 2007. *Downtown Station Area Specific Plan*. October.

Santa Rosa. 2009. *City of Santa Rosa General Plan 2035*. November.

Santa Rosa. 2010. *Bicycle and Pedestrian Master Plan*. September.

Santa Rosa. 2012a. *Climate Action Plan*. June 5.

Santa Rosa. 2012b. *North Santa Rosa Station Area Specific Plan*. September.

Santa Rosa. 2013. *Municipal Operations Climate Action Plan*. August.

U.S. Environmental Protection Agency (U.S. EPA). 2013. *Inventory of U.S. Greenhouse Gas Emissions and Sinks*. April.

3.7 Hazards and Hazardous Materials

This section evaluates the potential impacts related to hazards and hazardous materials during construction and operation of the Project. The impacts and mitigation measures section establishes the thresholds of significance, evaluates potential hazard and hazardous material impacts, and identifies the significance of impacts. Where appropriate, mitigation is presented to reduce impacts to less-than-significant levels.

3.7.1 Impacts Evaluated in Other Sections

The following subjects are related to hazards and hazardous materials, but are evaluated in other sections of this document:

- Potential impacts to emergency access are evaluated in Section 3.12, Transportation.
- Potential impacts to schools and other sensitive receptors from vehicle emissions are evaluated in Section 3.2, Air Quality
- Potential impacts to biological resources from hazardous materials are evaluated in Section 3.3, Biological Resources

3.7.2 Setting

Definition of Hazardous Materials

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, State, or local agency, or if it has characteristics defined as hazardous by such an agency. Factors that influence the health effects of exposure to hazardous material include the dose to which the person is exposed, the frequency of exposure, the exposure pathway, and individual susceptibility.

The California Code of Regulations (CCR) defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either: (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed (CCR, Title 22, Division 4.5, Chapter 10, Article 2, Section 66260.10). Hazardous materials are classified according to four properties: toxicity, ignitability, corrosivity, and reactivity (CCR, Title 22, Chapter 11, Article 3), which are defined in the CCR, Title 22, Sections 66261.20-66261.24.

Potential Receptors/Exposure

The sensitivity of potential receptors is dependent on several factors, the primary factor being an individual's potential pathway for exposure. Exposure pathways include external exposure, inhalation, and ingestion of tainted air, water, or food. The magnitude, frequency, and duration of human exposure can cause a variety of health effects ranging from short-term acute symptoms to long-term chronic effects. Potential health effects from exposure can be evaluated in a health risk assessment. Children at school are an example of a sensitive receptor that could be susceptible to significant effects from exposure to hazardous materials. Schools located within 0.25 mile of the Project are listed in Table 3.7-1 below.

Table 3.7-1 Schools within 0.25 Mile of the Project

School	Distance from Jennings Ave Project Area	Distance from W. Sixth Street Project Area	Distance from W. Seventh Street Project Area	Distance from W. Eighth Street Project Area
Little People Playhouse (Daycare and Preschool)	50 feet north	Greater than 0.25 mile	Greater than 0.25 mile	Greater than 0.25 mile
Kid Street Learning Center (Charter School and After School Program for Transitional Kindergarten through 6th Grades)	Greater than 0.25 mile	800 feet	500 feet	400 feet
Chop's Teen Club (After School Program)	Greater than 0.25 mile	50 feet	150 feet	450 feet

Hazardous Materials in Soil and Groundwater

In some cases, past industrial or commercial activities on a site could have resulted in spills or leaks of hazardous materials to the ground, resulting in soil and/or groundwater contamination. Disturbance of subsurface soil during construction can lead to exposure of workers or the public from stockpiling, handling, or transportation of soils contaminated by hazardous materials from previous spills or leaks.

State of California Government Code § 65962.5, the Hazardous Waste and Substances Sites List (Cortese List) is a planning document used to comply with the CEQA requirements for providing information about the location of hazardous materials release sites. A search of the Cortese List was completed to identify any known environmental case sites located on or adjacent to the Project (DTSC 2014a, 2014b; SWRCB 2014a, 2014b, 2014c).

Active (e.g., "open") environmental cases within 500 feet of the Project construction area boundary, and closed environmental cases within 100 feet and their potential to affect soil and groundwater conditions during construction-related excavation are summarized in Table 3.7-2. The table rates the sites' potential to affect the Project according to the classifications described below:

> Low Potential. Off-site environmental cases that are listed as closed, because remediation or cleanup has been completed and approved by the regulatory agency, would be considered to have a low potential to affect the Project area. The potential to affect subsurface conditions at a site would also be considered to be low if any of the following three factors is known to occur: 1) the direction of groundwater flow is away from the Project area; 2) the lateral extent of contamination from the occurrence is known and is not present within the Plan area; or 3) only soil was affected by the occurrence and the potentially contaminated site is not located within the Project construction area boundary.

Table 3.7-2 Environmental Cases within 500 feet of the Project

Environmental Case within 500 feet of Construction Area(s)	Proximity to Project and/or Crossing Closure Construction Area(s)	Regulatory List	Type of Contaminant Suspected/ Media Affected	Case Summary	Potential to Affect Project
Southern Pacific Transportation Company (T0609700676, SL0002016200) 2 4th Street 34 6th Street	• Jennings Ave: Not within 500 feet • W. Sixth St.: 274 feet southwest (2 4th St); 100 feet southwest (34 6th St.) • W. Seventh St.: Not within 500 feet (2 4th St.); 300 feet northeast (34 6th St.) • W. Eighth St.: Not within 500 feet	Geotracker LUST	Diesel / Gasoline / Heating Oil / Fuel Oil / MTBE / TBA / Other Fuel Oxygenates / Polynuclear aromatic hydrocarbons (PAHs) / Tetrachloroethylene (PCE) Aquifer used for drinking water supply	Open – Eligible for closure as of December 20, 2013 (Case T0609700676) Open – Site Assessment as of June 2, 2009 (Case SL0002016200) Groundwater flow reported as west/northwest, but historically groundwater flow trends were to the west-southwest (Antea Group 2014). Remediation activities have included removal of 6,500 cubic yards of impacted soil, removal of former UST, removal of groundwater. Remediation activities have focused on the northern portion of the environmental case site, which is closest to the Project site.	Moderate
Grace Property (T0609700530) 802/806 Donahue St	• Jennings Ave: Not within 500 feet • W. Sixth St.: Not within 500 feet • W. Seventh St.: Not within 500 feet • W. Eighth St.: 100 feet northwest	Geotracker LUST	Diesel, Gasoline / Aquifer used for drinking water supply	Completed – Case Closed as of November 7, 2013. Former winery with fuel oil tank. No further action letter issued on November 5, 2013.	Low

Environmental Case within 500 feet of Construction Area(s)	Proximity to Project and/or Crossing Closure Construction Area(s)	Regulatory List	Type of Contaminant Suspected/ Media Affected	Case Summary	Potential to Affect Project
Francis Buekers (T0609791093) 700 Wilson St	• Jennings Ave: Not within 500 feet • W. Sixth St.: Not within 500 feet • W. Seventh St.: 288 feet northeast • W. Eighth St.: 84 feet east	Geotracker LUST	Gasoline/ Aquifer used for drinking water supply	Completed – Case Closed as of September 6, 2001. No site history is available.	Low
Santa Rosa Sixth St. Drainage Improvements **(T0609793557)** W. Sixth St	• Jennings Ave: Not within 500 feet • W. Sixth St.: Within construction area boundary • W. Seventh St.: 292 feet north • W. Eighth St.: Not within 500 feet	Geotracker LUST	Waste Oil/ Motor/ Hydraulic/ Lubricating/ Soil	Completed – Case Closed as of June 4, 2009. The Santa Rosa Utilities department conducted a sewer and water project in the Railroad Square area, through areas of soil and groundwater impact. The file was created for regulatory participation. While the environmental case is mapped as occurring within the W. Sixth Street construction area boundary, the actual location of contamination and remediation is not known.	Moderate

Source (unless otherwise noted): SWRCB 2014b

Note: LUST = Leaking Underground Storage Tank

Moderate Potential. The potential to affect subsurface conditions within the Project area would be considered to be moderate, and further investigation might be necessary, if the following three factors occur: 1) a closed on-site occurrence exists within the Project area; 2) an off-site occurrence was reported within 500 feet of the Project area; 3) the extent of contamination and remedial status is not known; and 4) the occurrence has affected groundwater and is located up-gradient from the Project area.

High Potential. The potential to affect subsurface conditions within the Project area would be considered to be high and further investigation would be necessary, if either of the following two factors is known to occur: 1) an active on-site occurrence exists within the Project area; or 2) contamination from an off-site occurrence is known to be present within the Project area.

Historical Contamination in Railroad Corridor

The EIR for the Sonoma-Marin Area Rail Transit (SMART) identified potential hazardous materials along the Santa Rosa segment of the railroad corridor (SMART 2005). Potential contaminants identified include phenol, creosol, and aerial deposited lead. These compounds may be contained in railroad timbers and could have leached into soils near road grade crossings. These contaminants could present an exposure risk from possible inhalation during ground disturbing construction activities.

Fire Hazards

The California Department of Forestry and Fire Protection (CAL FIRE) identifies fire hazard areas and fire-threatened communities at the wildland urban interface. The Project areas are located on urban land designated as “non-very high fire hazard severity zone” (CAL FIRE 2008).

The Santa Rosa General Plan identifies hillside residential neighborhoods located in the northern and eastern portions of the city as at risk of wildland fire; the Project area is not located in either of these hillside residential areas (Santa Rosa 2009a).

Airports

The nearest public airport to the Project is the Charles M. Schulz-Sonoma County Airport, located over five miles to the north of the Project site and potential crossing closures. The Project is not located within an airport referral area for the Sonoma County Airport Land Use Plan. No private airstrips are in the Project vicinity.

3.7.3 Regulatory Framework

Hazardous materials and hazardous wastes are subject to numerous federal, State, and local laws and regulations intended to protect public health and safety and the environment. The U.S. Environmental Protection Agency (U.S. EPA), U.S. Department of Transportation (DOT), California Environmental Protection Agency (Cal/EPA), and Department of Toxic Substances Control (DTSC) are the primary agencies that enforce these regulations. The main focus of the federal Occupational Safety and Health Administration (Fed/OSHA) and California Occupational Safety and Health Administration (Cal/OSHA) are to prevent work-related injuries and illnesses, including those from exposures to hazardous materials. CAL FIRE implements fire safety regulations. In accordance with Chapter 6.11 of the California Health and Safety Code (CHSC, Section 25404, et seq.), local regulatory agencies enforce many federal and State regulatory programs through the Certified Unified Program Agency (CUPA) program, including:

- State Uniform Fire Code requirements (Section 80.103 of the California Fire Code as adopted by the State Fire Marshal pursuant to Health and Safety Code Section 13143.9);
- Underground storage tanks (Chapter 6.7 of the Health and Safety Code, Sections 25280 et seq.);

The Santa Rosa Fire Department is the CUPA agency for cleanup of underground fuel leaks in Santa Rosa.

Federal

The primary federal agencies with responsibility for hazardous materials management include the U.S. EPA, Fed/OSHA, and the DOT. Federal laws, regulations, and responsible agencies relevant to the Project are summarized in Table 3.7-3.

State and local agencies often have either parallel or more stringent regulations than federal agencies. In most cases, State law mirrors or overlaps federal law and enforcement of these laws is the responsibility of the State or of a local agency to which enforcement powers are delegated. For these reasons, the requirements of the law and its enforcement are discussed under either the State or local regulatory section.

Table 3.7-3 Federal Laws and Regulations Related to Hazardous Materials Management

Classification	Law or Responsible Federal Agency	Description
Hazardous Materials Management and Soil and Groundwater Contamination	Community Right-to-Know Act of 1986 (also known as Title III of the Superfund Amendments and Reauthorization Act [SARA])	Imposes requirements to ensure that hazardous materials are properly handled, used, stored, and disposed of and to prevent or mitigate injury to human health or the environment in the event that such materials are accidentally released.
	Comprehensive Environmental Response, Compensation and Liability Act of 1980 (amended by SARA 1986 and Brownfields Amendments 2002)	Regulates the cleanup of sites contaminated by releases of hazardous substances.
	State of California Government Code § 65962.5 (Cortese List)	Identifies sites with leaking underground fuel tanks, hazardous waste facilities subject to corrective actions, solid waste disposal facilities from which there is a known migration of hazardous waste, and other sites where environmental releases have occurred.

Classification	Law or Responsible Federal Agency	Description
Hazardous Materials Transportation and Handling	U.S. Department of Transportation (DOT)	Has the regulatory responsibility for the safe transportation of hazardous materials. The DOT regulations govern all means of transportation except packages shipped by mail (49 Code of Federal Regulations [CFR]).
Occupational Safety	Occupational Safety and Health Act of 1970	Fed/OSHA sets standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries (29 CFR).
Structural and Building Components (Lead-based paint, PCBs, and asbestos)	Toxic Substances Control Act (TSCA)	Regulates the use and management of PCBs in electrical equipment, and sets forth detailed safeguards to be followed during the disposal of such items.
	U.S. EPA	The EPA monitors and regulates hazardous materials used in structural and building components and effects on human health.

Source: Santa Rosa 2009b

State

Soil and Groundwater Contamination

The cleanup of sites contaminated by releases of hazardous substances is regulated primarily by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), which was amended by the Superfund Amendment and Reauthorization Act of 1986 (SARA), the Brownfields Amendments (2002) and by similar State laws. Under CERCLA, the EPA has authority to seek the parties responsible for releasing hazardous substances and to ensure their cooperation in site remediation.

The State's Hazardous Waste and Substances Sites List (Cortese List, Government Code §65962.5) identifies sites with leaking underground fuel tanks, hazardous waste facilities subject to corrective actions, solid waste disposal facilities from which there is a known migration of hazardous waste, and other sites where environmental releases have occurred. Before a local agency accepts an application as complete for any development project, the applicant must certify whether or not the project site is on the Cortese List. Databases that provide information regarding the facilities or sites identified as meeting Cortese List requirements are managed by the DTSC and State Water Resources Control Board (SWRCB). At sites where contamination is suspected or known to have occurred, the site owner is required to perform a site investigation and conduct site remediation, if necessary. There are two cleanup standards; one for residential and the other for commercial/industrial land uses. Standards are set for soil, groundwater, soil gas, and vapor intrusion of contaminants into buildings.

Hazardous Materials Transportation

The State of California has adopted DOT regulations for the intrastate movement of hazardous materials. State regulations are contained in Title 26 of the CCR. In addition, the State of California regulates the transportation of hazardous waste originating in the state and passing through the state (26 CCR). Both regulatory programs apply in California. The two State agencies that have primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans).

Occupational Safety

Worker health and safety in California is regulated by Cal/OSHA. California standards for workers dealing with hazardous materials (including hazardous wastes) are contained in CCR Title 8. DTSC and the State Department of Occupational Health and Safety are the agencies that are responsible for overseeing that appropriate measures are taken to protect workers from exposure to potential groundwater contaminants. At sites known or suspected to have soil or groundwater contamination, a site health and safety plan must be prepared. The health and safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

Emergency Response

California has developed an emergency response plan to coordinate emergency services provided by federal, State, and local government, and private agencies. Responding to hazardous materials incidents is a part of this plan. The plan is administered by the State Office of Emergency Services (OES), which coordinates the responses of other agencies such as local fire and police agencies, emergency medical providers, CHP, the California Department of Fish and Wildlife, and Caltrans.

Regional and Local

Soil and Groundwater Contamination

In Santa Rosa, oversight of contaminated sites such as leaking USTs is performed by the Santa Rosa Fire Department and the Regional Water Quality Control Board (RWQCB). The Santa Rosa Fire Department implements a local oversight program under contract with the SWRCB to provide regulatory oversight of the investigation and cleanup of soil and groundwater contamination from leaking petroleum underground storage tanks and above-ground storage tanks. At sites where contamination is suspected or known to have occurred, the project sponsor is required to perform a site investigation and prepare a remediation plan, if necessary. For typical development projects, actual site remediation is completed either before or during the construction phase of the project. Site remediation or development may be subject to regulation by other agencies such as the DTSC.

Santa Rosa Local Hazards Mitigation Plan

The City's local hazards mitigation plan is a multi-jurisdictional document entitled *Taming Natural Disasters*, last updated in 2010 (ABAG 2010). The City of Santa Rosa adopted the document as its hazards mitigation strategy in May 2006 and has prepared an annex to the regional plan focusing on local mitigation strategies. The goal of the mitigation plan is to maintain and enhance a disaster resistant region by reducing the potential loss of life, property damage, and environmental degradation from natural disasters, while accelerating economic recovery from those disasters.

The City is committed to reviewing and updating its plan annex at least once every five years, as required by the Disaster Mitigation Act of 2000.

Emergency Response

The Sonoma County Department of Emergency Services Hazardous Materials Division is responsible for the enforcement of the regulatory-based Hazardous Materials Business Plan Program, Hazardous Waste Program, Underground Tank Program, Accidental Release Program, and the portions of the California Fire Code that address hazardous materials.

The City of Santa Rosa adopted an Emergency Operations Plan in 2013. The Santa Rosa Emergency Operations Plan identifies the City's emergency planning, organization and response policies and procedures. It addresses how the City will respond to extraordinary events or disasters, from preparation through recovery, and the responsibilities of each department and emergency operations center position. It also addresses the integration and coordination with other governmental levels and special districts. The City's Plan does not designate specific evacuation routes or sites within the City (Santa Rosa 2013).

City of Santa Rosa General Plan Goals and Policies

The following are the goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.

NS-F Minimize dangers from hazardous materials.

NS-F-1 Require remediation and cleanup, and evaluate risk prior to reuse, in identified areas where hazardous materials and petroleum products have impacted soil or groundwater.

NS-G Minimize the potential for wildland fires.

NS-G-1 Require proposed developments in high or medium fire hazard areas to investigate a site's vulnerability to fire and to minimize risk accordingly.

North Santa Rosa Station Area Specific Plan Goals and Policies

There are no goals or policies from the *North Santa Rosa Station Area Specific Plan* that are applicable to hazards and hazardous materials.

Downtown Santa Rosa Station Area Specific Plan Goals and Policies

There are no goals or policies from the *Downtown Santa Rosa Station Area Specific Plan* that are applicable to hazards and hazardous materials.

3.7.4 Evaluation Criteria and Significance Thresholds

For the purposes of this EIR, the evaluation criteria and significance thresholds summarized in Table 3.7-4 are used to determine if the Project would have a significant effect related to hazards and hazardous materials.

Table 3.7-4 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
HAZ-1: Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Increase in use, storage, or disposal of hazardous waste or materials not in accordance with State, and federal hazardous materials or waste regulations	CEQA Guidelines Appendix G, Checklist Item VIII (a) California (Title 8 and 26 of the CCR), and federal (CFR 29 and 49) hazardous materials and waste regulations
HAZ-2: Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, or a known hazardous site, or would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	Construction on a listed hazardous waste site, or environmental cases rated as having a “moderate” or “high” potential to affect the Project.	CEQA Guidelines Appendix G, Checklist Item VIII (b) and (d) Government Code Section 65962.5 (Cortese List) Santa Rosa General Plan Goal NS-F and Policy NS-F-1
HAZ-3: Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Increase in transport, use, storage, emission, or disposal of hazardous materials within 0.25 mile of a school	CEQA Guidelines Appendix G, Checklist Item VIII (c)
HAZ-4: Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Location of Project in areas that impair or interfere with adopted plan	CEQA Guidelines Appendix G, Checklist Item VII (g);

Areas of No Project Impact

As explained below, construction of the Project would not result in impacts related to several Checklist questions for hazards contained in Appendix G of the current CEQA Guidelines. For the reasons presented below, the following evaluation criteria are not applicable to the Project.

- ***Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and would result in a safety hazard for people residing or working in the project area.***

The proposed Project is not located within an airport land use plan or within two miles of a public airport. Therefore, this significance criterion is not applicable to the Project and is not discussed further.

- ***Be within the vicinity of a private airstrip, and result in a safety hazard for people residing or working in the Project area?***

  The proposed Project is not located within the vicinity of a private airstrip. Therefore, this significance criterion is not applicable to the Project and is not discussed further.

- ***Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?***

  The City of Santa Rosa Emergency Operations Plan includes policies and procedures for declarations of emergency, use of City employees, organization of incident command systems, and mutual aid agreements. The plan does not designate specific evacuation routes or emergency shelter locations, or include policies or procedures of which the Preferred Project or the Rail Overcrossing Alternative would be in conflict. There would be no impact. Therefore, this significance criterion is not applicable to the Project and is not discussed further.

- ***Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?***

  The California Department of Forestry and Fire Protection (CAL FIRE) identifies fire hazard areas and fire-threatened communities at the wildland urban interface. The Project is not located within a CAL FIRE-designated fire hazard severity zone and has not been identified as being at risk for wildland fires in the Santa Rosa General Plan (CAL FIRE 2008; Santa Rosa 2009a). Therefore, this significance criterion is not applicable to the Project and is not discussed further.

3.7.5 Methodology

This impact analysis focuses on the potential to encounter hazardous substances in soil and groundwater during construction and the potential to discharge hazardous materials during Project operations. The evaluation was performed taking into account current conditions at the proposed Project sites, information obtained from the databases comprising the Cortese List, applicable regulations and guidelines, and proposed construction activities and operations.

3.7.6 Impacts and Mitigation Measures

Table 3.7-5 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.	
HAZ-1: Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	LS	LS	LS	LS
HAZ-2: Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, or a known hazardous site, or would the Project create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	LSM	LSM	LSM	LSM
HAZ-3: Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	LS	LS	LS	LS
HAZ-C-1: Would the Project result in a cumulatively considerable contribution to a significant cumulative impact related to hazards or hazardous materials?	LS	LS	LS	LS

Notes: LS = Less than Significant
LSM = Less than Significant with Mitigation

Impact: **HAZ-1: Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

<u>Construction</u>

Construction of both the Preferred Project and the Rail Overcrossing Alternative would use and transport hazardous materials such as fuels, lubricants, paints, asphalt materials, concrete curing compounds, and solvents; the Rail

Overcrossing Alternative would use more materials and transport them for a longer duration than the Preferred Project.

Numerous laws and regulations ensure the safe transportation, use, storage, and disposal of hazardous materials (see Section 3.7.3 [Regulatory Framework]). Caltrans and the CHP regulate the transportation of hazardous materials and wastes, including container types and packaging requirements, and licensing and training for truck operators, chemical handlers, and hazardous waste haulers. Worker safety regulations cover hazards related to the prevention of exposure to hazardous materials and a release to the environment from hazardous materials use. Regulations and criteria for the disposal of hazardous materials mandate disposal at an appropriate landfill. Cal-OSHA also enforces hazard communication program regulations, which contain worker safety training and hazard information requirements, such as procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees.

Therefore, because the City and its contractors would be required to comply with existing and future hazardous materials laws and regulations covering the transport, use, and disposal of hazardous materials, the impacts associated with the potential to create a significant hazard to the public or the environment during construction of the Preferred Project would be less than significant.

<u>Operation</u>

Operation of both the Preferred Project and the Rail Overcrossing Alternative would not require the routine use, disposal, or transportation of hazardous materials. No operational impact would occur.

Mitigation: No mitigation is needed.

Impact: **HAZ-2: Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, or a known hazardous site, or would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Rail Overcrossing Alternative (Significant)

<u>Construction</u>

There are two types of accidental releases that could occur during construction: 1) accidental spills; and 2) discovery of existing contaminated soil or groundwater at the construction sites. Both types of accidental releases are discussed below.

Accidental Spills

Construction of both the Preferred Project and the Rail Overcrossing Alternative would use hazardous materials such as fuels, lubricants, paints, asphalt products, concrete curing compounds, and solvents. Improper storage and use

of these materials at construction sites and staging areas could result in an accidental release of small quantities of these materials, which could pose a risk to construction workers and the environment, such as degradation of soil and groundwater quality and/or the surface water quality of Steele Creek. As summarized in Chapter 2, Project Description, Section 2.6 (Project Measures), implementation of Project Measure 3 (Implement Storm Water Control Measures during Construction) is included as part of the Project. Project Measure 3 requires implementation of best management practices (BMPs) for materials management, including material delivery and storage, spill prevention and control, and management of concrete and other wastes. With implementation of Project Measure 3, construction activities associated with the Preferred Project and the Rail Overcrossing Alternative would be required to properly use, store, and contain hazardous materials, thereby reducing the potential for inadvertent releases at construction sites to a less-than-significant level.

Discovery of Existing Contamination

The greatest potential for encountering contaminated soil and groundwater during construction would be in areas where past or current land uses may have resulted in leaking fuel or chemical storage tanks or other releases of hazardous materials. Properties with known soil and/or groundwater contamination are referred to as environmental cases.

There are no documented environmental cases that could potentially affect subsurface conditions at the Jennings Avenue site during construction of the Preferred Project or Rail Overcrossing Alternative.

However, as identified in Table 3.7-2, five environmental cases included on the lists of hazardous waste sites compiled pursuant to Government Code Section 65962.5 could potentially affect subsurface conditions at the W. Sixth Street, W. Seventh Street, or W. Eighth Street crossing closure locations as part of the Preferred Project. Out of the five cases, two (Francis Buekers and Grace Property) are identified as having a low risk of encountering contaminants during construction, because they are located off-site of the proposed construction sites, remediation has already occurred, contaminated soil and groundwater has been treated or removed, and the cases are closed. The impact related to the Francis Buekers and Grace Property environmental cases would be less than significant for the Preferred Project (and no impact for the Rail Overcrossing Alternative).

The risk of encountering residual contaminated material at the closed Santa Rosa Sixth Street Drainage Improvements case site is anticipated to be moderate. While the exact location of the discovered contaminants and remediation activities are not known, the case is mapped as occurring within the construction area boundary for the W. Sixth Street site. Because this is a moderate risk to the Project and because construction would occur on a listed hazardous waste site, the impact for the Preferred Project would be significant (and no impact for the Rail Overcrossing Alternative).

Two cases at the former Southern Pacific Transportation Company rail yard are also identified as having a moderate risk of encountering contaminants during excavation. These cases are located within 100 to 300 feet of the construction

area boundary of the W. Sixth Street and W. Seventh Street Preferred Project sites. Remediation of soil and groundwater is ongoing, and based on historical groundwater gradient flow trends, there is a potential for contaminated groundwater to have migrated into the construction area boundary at the W. Sixth Street or W. Seventh Street sites. Because of these factors, the impact of the two Southern Pacific Transportation Company environmental case sites to the Preferred Project at W. Sixth Street or W. Seventh Street would be significant. There would be no impact to the Rail Overcrossing Alternative.

In addition to the known environmental cases described above, it is anticipated that historical contamination may generally occur within the railroad corridor, including phenol, creosol, and aerially deposited lead (SMART 2005). These compounds may have been contained in railroad timbers. The railroad timbers have since been removed, however, residual contamination may have leached into soils near road grade crossings. Potential historical contamination in the railroad corridor could pose a risk to public health and the environment if such contamination was present and was accidentally released or otherwise mobilized during construction. Because the extent of historical rail-related contamination along the rail corridor at Jennings Avenue and W. Sixth Street, W. Seventh Street, and W. Eighth Street is unknown, it is conservatively assumed that contaminants such as phenol, creosol, and aerially deposited lead could be encountered during construction within the rail corridor. If subsurface contamination is encountered and accidentally released during construction, the potential impact to construction workers, the public, and the environment would be significant for both the Preferred Project and the Rail Overcrossing Alternative.

<u>Operation</u>

Following construction, no additional ground-disturbing activities would occur, and operation of both the Preferred Project and the Rail Overcrossing Alternative would not require the routine use or disposal of hazardous materials or wastes. Therefore no impact would occur related to accidental release of hazardous materials.

Mitigation: **Mitigation Measure HAZ-1: Health and Safety Plan *(Preferred Project and Rail Overcrossing Alternative)***

Prior to construction, the City shall require the construction contractor to prepare a site-specific health and safety plan in accordance with federal OSHA regulations (29 CFR 1910.120) and Cal-OSHA regulations (8 CCR Title 8, Section 5192) to address worker health and safety issues during construction. The health and safety plan shall identify the potentially present chemicals, health and safety hazards associated with those chemicals, all required measures to protect construction workers and the general public from exposure to harmful levels of any chemicals identified at the site (including engineering controls, monitoring, and security measures to prevent unauthorized entry to the work area), appropriate personal protective equipment, and emergency response procedures. The health and safety plan shall designate qualified individuals responsible for implementing the plan and for directing subsequent procedures in the event that unanticipated contamination is encountered.

Mitigation Measure HAZ-2: Hazardous Materials Management Plan *(Preferred Project and Rail Overcrossing Alternative)*

Prior to construction, the City shall require the contractor to prepare a hazardous materials management plan that specifies the method for handling and disposal of both chemical products and hazardous materials during construction and contaminated soil and groundwater, should any be encountered during construction. Contract specifications shall mandate full compliance with all applicable local, State, and federal regulations related to identifying, transporting, and disposing of hazardous materials, including any hazardous wastes encountered in excavated soil or groundwater.

If contaminated soil or groundwater is encountered during construction, work shall stop and notification shall be made to the Santa Rosa Fire Department. The City shall require the construction contractor to prepare and implement a construction Soil and Groundwater Management Plan. The contractor shall submit the Plan to the Santa Rosa Fire Department for review and approval. Elements of the plan shall include:

- Measures to address hazardous materials and other worker health and safety issues during construction, including the specific level of protection required for construction workers.
- Provisions for excavation of soil, stockpiling, and dust control measures.
- Measures to prevent off-site migration of contaminated soil and groundwater.
- Location and final disposition of all soil and groundwater removed from the site.
- All other necessary procedures to ensure that excavated materials are stored, managed, and disposed of in a manner that is protective of human health and in accordance with applicable laws and regulations.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Rail Overcrossing Alternative (Less than Significant with Mitigation)

Mitigation Measures HAZ-1 and HAZ-2 require preparation of a site health and safety plan to protect construction worker health and safety, and a hazardous materials management plan to ensure that appropriate procedures are followed in the event that hazardous materials, including unanticipated hazardous materials, are encountered during project construction, and to ensure that hazardous materials are transported and disposed of in a safe and lawful manner. With implementation of these mitigation measures, potential risk to construction workers, the public, and the environment from accidental release of hazardous materials during construction of both the Preferred Project and the Rail Overcrossing Alternative would be less than significant.

Impact: **HAZ-3: Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

Construction

As shown in Table 3.7-1, several schools are located within a quarter-mile of the Preferred Project and Rail Overcrossing Alternative construction areas. Little People's Playhouse, a daycare and preschool, is located along Herbert Street on the east side of the rail corridor near Jennings Avenue. An outdoor play area for the preschool is located approximately 50 feet to the north of an anticipated construction staging area at Jennings Avenue for both the Preferred Project and the Rail Overcrossing Alternative.

Kid Street Learning Center, a charter school and after school program, is located along Davis Street on the east side of the rail corridor near the potential crossing closure sites for the Preferred Project. Specifically, the Kid Street Learning Center is located approximately 800 feet from the potential crossing closure at W. Sixth Street, 500 feet from W. Seventh Street, and 400 feet from W. Eighth Street. CHOP's Teen Club, an after-school program for teenagers, is located on W. Sixth Street and Adams Street. It is located within 50 feet of W. Sixth Street, 150 feet from W. Seventh Street, and 450 feet from W. Eighth Street.

Potentially hazardous materials to be used during construction would include lubricants, degreasers, paints, solvents, concrete curing compounds, asphalt materials, and fuels. These materials are commonly used during construction, are not acutely hazardous, and would be used in small quantities. Numerous laws and regulations ensure the safe transportation, use, storage, and disposal of hazardous materials (see Section 3.7.3 [Regulatory Framework]). Routine transport of hazardous materials to and from facility sites could result in an incremental increase in the potential for accidents. However, Caltrans and the CHP strictly regulate the transportation of hazardous materials and wastes.

Although construction activities could result in the inadvertent release of small quantities of hazardous construction chemicals, a spill or release is not expected to endanger individuals at nearby schools given the nature of the materials and the small quantities that would be used. Therefore, because the City and its contractors would be required to comply with existing and future hazardous materials laws and regulations covering the transport, use, and disposal of hazardous materials, and because of the nature and quantity of the hazardous materials, the potential impact on schools related to the use of hazardous materials would be less than significant. In addition, although the impact is considered less than significant, the standard BMPs that would be implemented under Project Measure 3 (Implement Storm Water Control Measures During Construction) would require specific preventative practices for spill prevention and control. These standard BMPs would further serve to prevent and contain inadvertent releases of hazardous materials at construction sites.

Operation

Operation of the Preferred Project and the Rail Overcrossing Alternative would not require the routine use or disposal of hazardous materials or wastes. Therefore, no impact would occur related to emission or handling of hazardous materials near schools.

Mitigation: No mitigation is needed.

3.7.7 Cumulative Impacts

Impact: **HAZ-C-1: Would the Project result in a cumulatively considerable contribution to a significant cumulative impact related to hazards or hazardous materials?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

Construction

Existing laws, regulations and programs adequately reduce potential risks from the transport, use or disposal of hazardous materials (including building materials), as well as the potential accidental releases of these materials, or the use of these materials near schools, to less-than-significant levels. All other potential projects within or around the Project area would be subject to the same laws, regulations and programs as the Project. With regard to encountering contamination during construction, this is a site-specific issue and would not accumulate as impacts on resources do. The Project would not cause a significant cumulative impact.

Operation

Operation of the Project would not require the routine use or disposal of hazardous materials or wastes. Operation of the Project would have no contribution to a cumulative impact.

Mitigation: No mitigation is needed

3.7.8 References

Antea Group. 2014. *Quarterly Monitoring Report – First Quarter 2104, Union Pacific Railroad, 2 Fourth Street and 34 Sixth Street, Santa Rosa, California*. April 17.

Association of Bay Area Governments (ABAG). 2010. *Taming Natural Disasters, Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*.

California Department of Forestry and Fire Protection (CAL FIRE). 2008. *Very High Fire Hazard Severity Zones in LRA, Sonoma County*. November 10.

Department of Toxic Substances Control (DTSC). 2014a. *Cortese List Section 65962.5(a)*. Accessed on August 11, 2014 at http://www.calepa.ca.gov/sitecleanup/corteselist/SectionA.htm.

DTSC. 2014b. *Envirostor list*. Accessed August 11, 2014 at: http://www.envirostor.dtsc.ca.gov/public/search.asp?cmd=search&reporttype=CORTESE&site_type=CSITES%2COPEN%2CFUDS%2CCLOSE&status=ACT%2CBKLG%2CCOM&reporttitle=HAZARDOUS%20WASTE%20AND%20SUBSTANCES%20SITE%20LIST

Santa Rosa, City of (Santa Rosa). 2009a. *Santa Rosa General Plan 2035*. November 3.

Santa Rosa. 2009b. *Santa Rosa General Plan 2035 Draft Environmental Impact Report*. March.

Santa Rosa. 2013. *Santa Rosa Emergency Operations Plan*. Revised August 17.

Sonoma Marin-Area Rapid Transit (SMART). 2005. *Sonoma-Marin Area Rail Transit Project Draft Environmental Impact Report*. November.

State Water Resources Control Board (SWRCB). 2014a. *Active CDO/CAO List.* Accessed August 11, 2014 at http://www.calepa.ca.gov/sitecleanup/corteselist/

SWRCB. 2014b. *Geotracker database results*. Accessed August 11, 2014 at https://geotracker.waterboards.ca.gov/.

SWRCB. 2014c. *Solid Waste Disposal Sites*. Accessed August 11, 2014 at http://www.calepa.ca.gov/sitecleanup/corteselist/CurrentList.pdf

3.8 Hydrology and Water Quality

This section evaluates potential environmental impacts related to hydrology and water quality during construction and operation of the Project. To provide the basis for this evaluation, the section provides an overview of the hydrological and regulatory setting that is applicable to the Project. The evaluation section establishes thresholds of significance, evaluates potential hydrology and water quality impacts, and describes appropriate mitigation measures, as necessary.

3.8.1 Impacts Evaluated in Other Sections

The following subjects are related to hydrology and water quality, but are evaluated in other sections of this document:

- Potential impacts to riparian habitat and federally protected wetlands and waters are addressed in Section 3.3, Biological Resources.
- Potential impacts related to loss of topsoil are addressed in Section 3.5, Geology and Soils.
- Potential impacts related to location on or near a hazardous materials site is addressed in Section 3.7, Hazards and Hazardous Materials.
- Potential impacts related to construction of new storm drain facilities are addressed in Section 3.13, Utilities and Service Systems.

3.8.2 Setting

Descriptions in this section are based on reviews of published information, reports, and plans regarding regional and local hydrology, climate, topography, and geology.

Regional Climate

The City's climate is influenced by the Pacific Ocean and is divided into wet and dry seasons. On average, approximately 93 percent of the annual precipitation falls during the wet season, from October to May, with a large percentage of the rainfall typically occurring during three or four major winter storms. Average annual precipitation in the Santa Rosa area is 29.6 inches. (Santa Rosa 2010).

Regional Hydrology

Generally, creeks within the City begin in the eastern foothills of the Mayacamas Mountains to the east, drop down to the urban area, and gradually make their way across the Santa Rosa Plain to join the Laguna de Santa Rosa, and ultimately the Russian River and Pacific Ocean (Santa Rosa 2013). The site of the proposed rail crossing at Jennings Avenue is located within the Piner Creek watershed, which drains the northwest portion of Santa Rosa (Santa Rosa 2013). Steele Creek is located on the east side of the rail corridor at Jennings Avenue, which flows north to Guerneville Road, then west to Piner Creek (Santa Rosa 2013). Piner Creek in turn drains to Santa Rosa Creek, which is a tributary to the Laguna de Santa Rosa. Storm water runoff in the area is currently conveyed through underground storm drains on the west and east side of the rail corridor. Underground storm drains are not present within the rail corridor.

The rail crossings at W. Sixth, W. Seventh, and W, Eight Street are located within the Santa Rosa Creek watershed (Santa Rosa 2013). Storm water runoff at these sites is conveyed through underground storm drains that ultimately connect to Santa Rosa Creek, which is located approximately 0.2 miles to the south of the rail crossings.

Beneficial Uses of Surface Waters

The current 2011 Basin Plan prepared by the North Coast Regional Water Quality Control Board (NCRWQCB) identifies the beneficial uses of surface waters and groundwater within its region (NCRWQCB 2011). The Basin Plan assigns beneficial uses by Hydrologic Sub Areas (HSAs). The Project is located within the Santa Rosa Creek HSA, which includes the following existing beneficial uses: Municipal and Domestic Supply; Agricultural Supply; Industrial Service Supply; Groundwater Recharge; Navigation; Water Contact Recreation; Non-Contact Water Recreation; Commercial and Sport Fishing; Warm Freshwater Habitat; Cold Freshwater Habitat; Wildlife Habitat; Rare, Threatened, or Endangered Species; Migration of Aquatic Organisms; Spawning, Reproduction, and/or Early Development.

Surface Water Quality

In accordance with Section 303(d) of the Federal Clean Water Act, state governments must present the U.S. Environmental Protection Agency (U.S. EPA) with a list of "impaired water bodies," defined as those water bodies that do not meet water quality standards, even after point sources of pollution have been equipped with the minimum required levels of pollution control technology. The current 2010 Clean Water Act Section 303(d) list assigns impaired water bodies by HSAs. The Project is located within the Santa Rosa Creek HSA, which is listed as impaired for indicator bacteria (pathogens), sediment/siltation, and water temperature[1] (SWRCB 2010).

Placement of a water body on the Section 303(d) list acts as the trigger for developing a Total Maximum Daily Load (TMDL), which is a pollution control plan for each water body and associated pollutant/stressor on the list. The TMDL identifies the quantity of a pollutant that can be safely assimilated by a water body without violating water quality standards. According to the NCRWQCB, the indicator bacteria (pathogen) listing in Santa Rosa Creek is being addressed as part of a larger Russian River Pathogen TMDL development effort. The draft TMDL is currently under development and is expected to be available for public review in the winter of 2015 (NCRWQCB 2013).

A TMDL Implementation Policy for sedimentation/siltation covering the North Coast Region was adopted by the NCRWQCB on November 29, 2004. The TMDL Implementation Policy states that the NCRWQCB shall control sediment pollution by using existing permitting and enforcement tools. The goals of the Policy are to control sediment waste discharges to impaired water bodies so that the TMDLs are met, sediment water quality objectives are attained, and beneficial uses are no longer adversely affected by sediment (NCRWQCB 2013).

A policy for implementation of water quality objectives for temperature in the Russian River watershed was adopted by the NCRWQCB in March 2014. The policy includes programs that prevent, minimize, and mitigate temperature alterations associated with such factors as reduced riparian shading of water bodies and activities that can affect sediment delivery, instream flows, and channel geometry (NCRWQCB 2014).

Drainage and Flooding

The Federal Emergency Management Agency (FEMA) delineates regional flooding hazards as part of the National Flood Insurance Program. The Jennings Avenue and W. Sixth, W. Seventh, and W. Eighth Street Project areas are not located within a FEMA designated flood hazard area (FEMA 2014; ABAG 2014).

[1] The entire Russian River watershed (including Santa Rosa Creek HAS) is listed for sedimentation and temperature.

In addition to natural flood hazards, flooding can occur as a result of inundation caused by failure of a dam, a result of seiches (i.e., earthquake-induced oscillating waves in an enclosed water body), tsunamis (i.e., earthquake-induced waves formed in the open ocean that reach a shoreline), or mudflows. As shown on Figure 12-4 of the Santa Rosa General Plan, the Jennings Avenue and W. Sixth, W. Seventh, and W. Eighth Street Project sites are not located within a dam inundation area (Santa Rosa 2009). Project areas are not located near isolated bodies of water that may be affected by a seiche, are not located within a tsunami inundation area based on mapping prepared by the California Emergency Management Agency (Cal EMA 2009), and are not located within a debris-flow source area based on landslide mapping prepared by the U.S. Geological Survey (USGS 1997).

Local Groundwater Basin and Beneficial Uses

The Project is located within the Santa Rosa Plain Sub-basin of the Santa Rosa Valley Groundwater Basin. The Santa Rosa Plain Sub-basin covers an area of approximately 80,000 acres and is home to approximately half of the population of Sonoma County, including the cities of Santa Rosa, Rohnert Park, Cotati, Sebastopol, the Town of Windsor, and unincorporated areas of Sonoma County. The groundwater system beneath the Santa Rosa Plain provides numerous benefits to the region, including rural residential and municipal water supplies, irrigation water for agriculture, and baseflow to streams and surface water bodies (Santa Rosa 2013). The current 2011 Basin Plan prepared by the NCRWQCB identifies the following beneficial uses of groundwater within its region: Municipal and Domestic Supply; Agricultural Supply; Industrial Service Supply; and Native American Cultural (NCRWQCB 2011, p. 2-12).

3.8.3 Regulatory Framework

Federal

Clean Water Act

The federal Clean Water Act, enacted by Congress in 1972 and amended several times since, is the primary federal law regulating water quality in the United States and forms the basis for several State and local laws throughout the country. The Act established the basic structure for regulating discharges of pollutants into the waters of the United States. The Clean Water Act gave the U.S. EPA the authority to implement federal pollution control programs, such as setting water quality standards for contaminants in surface water, establishing wastewater and effluent discharge limits for various industry categories, and imposing requirements for controlling nonpoint source pollution. At the federal level, the Clean Water Act is administered by the U.S. EPA and U.S. Army Corps of Engineers (USACE). At the state and regional levels in California, the act is administered and enforced by the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs).

National Flood Insurance Program

FEMA administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA also issues Flood Insurance Rate Maps identifying which land areas are subject to flooding. The maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA, with the minimum level of flood protection for new development determined to be the 1-in-100 annual exceedance probability (i.e., the 100-year flood event).

State

Porter Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act is the primary statute covering the quality of waters in California. Under the Act, the SWRCB has the ultimate authority over State water rights and water quality policy. The nine RWQCBs regulate water quality under this Act through the regulatory standards and objectives set forth in Water Quality Control Plans (also referred to as Basin Plans) prepared for each region.

The five-member State Water Resources Control Board allocates water rights, adjudicates water right disputes, develops state-wide water protection plans, establishes water quality standards, and guides the nine RWQCBs located in the major watersheds of the state. The joint authority of water allocation and water quality protection enables the SWRCB to provide comprehensive protection for California's waters. The SWRCB is responsible for implementing the Clean Water Act, issues National Pollutant Discharge Elimination System (NPDES) permits to cities and counties through RWQCBs, and implements and enforces the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (Order No. 2009-0009, as amended by Order No. 2010-0014). Order No. 2009-0009 took effect on July 1, 2010 and was amended on February 14, 2011. The Order applies to construction sites that include one or more acres of soil disturbance. Construction activities include clearing, grading, grubbing, excavation, stockpiling, and reconstruction of existing facilities involving removal or replacement.

Regional and Local

Regional Water Quality Control Board

RWQCBs adopt and implement water quality control plans (Basin Plans) which recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems. The current 2011 Basin Plan prepared by the NCRWQCB provides a definitive program of actions designed to preserve and enhance water quality and to protect beneficial uses of water in the North Coast Region.

The NCRWQCB also oversees and regulates groundwater investigations, clean-up, and abatement activities at sites with identified pollution problems. NCRWQCB Order No. R1-2009-0045, Waste Discharge Requirements for Low Threat Discharges to Surface Waters in the North Coast Region, applies to discharges of excavation dewatering. This Order requires development of a Best Management Practices/Pollution Prevention Plan to characterize the discharge and to identify specific measures to control the discharge, such as sediment controls to ensure that excessive sediment is not discharged and flow controls to prevent erosion and flooding downstream of the discharge.

Santa Rosa NPDES Storm Water Permit and Low Impact Development Technical Design Manual

NCRWQCB Order No. R1-2009-0050 is the City of Santa Rosa's current NPDES storm water permit (NCRWQCB 2009). The permit regulates both storm water and non-storm water discharges from public and private projects into the Santa Rosa municipal storm drain system. The permit requires a minimum set of best management practices (BMPs) to be implemented at all construction sites, as well as permanent storm water low impact development (LID) BMPs. In August 2011, the City adopted its Storm Water Low Impact Development Technical Design Manual (Storm Water LID Manual) (Santa Rosa 2011), which applies to both privately sponsored projects and capital improvement projects that meet any of the following criteria:

- Development that creates or replaces a combined total of 1 acre or more of new impervious surface;
- Street, road, highway, or freeway construction or reconstruction, creating or replacing 10,000 square feet or more of impervious surface;
- All development that includes four or more dwelling units;
- Industrial parks, commercial strip malls, retail gasoline outlets, restaurants, or automotive service facilities creating or replacing 10,000 square feet or more of impervious surface. Parking lots, 25 or more spaces or 10,000 square feet not associated with other projects; or
- Parking lots with 25 or more spaces or 10,000 square feet not associated with other projects.

Projects that meet the criteria must capture, treat, and infiltrate storm water as close to the source as possible using small scale landscape-based features located throughout the project site per the criteria in the Storm Water LID Manual.

City of Santa Rosa General Plan Goals and Policies

The following are goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.[2]

PSF-I Manage, maintain, and improve stormwater drainage and capacity.

PSF-I-3 Require erosion and sedimentation control measures to maintain an operational drainage system, preserve drainage capacity, and protect water quality.

PSF-I-4 Require measures to maintain and improve the storm drainage system, consistent with goals of the Santa Rosa Citywide Creek Master Plan, to preserve natural conditions of waterways and minimize paving of creek channels.

PSF-I-6 Require implementation of Best Management Practices to reduce drainage system discharge of non-point source pollutants originating from streets, parking lots, residential areas, businesses, industrial operations, and those open space areas involved with pesticide application.

North Santa Rosa Station Area Specific Plan Goals and Policies

The following are the goals and policies from the *North Santa Rosa Station Area Specific Plan* that are applicable to the Project.

PF-7 Manage, maintain, and improve stormwater drainage and capacity in the plan area.

PF-7.1 New development and capital improvement projects shall reduce pollution and runoff flows impacting Paulin and Steele creeks by following the City's Storm Water Low Impact Development Technical Design Manual.

Downtown Santa Rosa Station Area Specific Plan Goals and Policies

No goals or policies related to hydrology and water quality in the Downtown Station Area Specific Plan are applicable to the Project.[3]

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[2] Because the City's Standard Urban Storm Water Mitigation Plan (SUSMP) was superceeded by the City's Storm Water Low Impact Development Technical Design Manual, Santa Rosa General Plan policies NS-D-3 and PSF-I-8 are no longer applicable.

[3] Because the City's SUSMP was superceeded by the City's Storm Water Low Impact Development Technical Design Manual, Downtown Santa Rosa Station Area Specific Plan policy SP-UPS-5.1 is no longer applicable.

Santa Rosa Citywide Creek Master Plan Goals and Policies

The *Santa Rosa Citywide Creek Master Plan* was last updated in August 2013 and provides guidelines for the care, management, restoration, and enhancement of nearly 100 miles of creeks in Santa Rosa. The Master Plan is intended for use by City and county staff when planning creek enhancement and restoration activities, coordination and expansion of creekside trail systems, making broader land-use planning decisions concerning creeks, and in the development approval process for projects proposed adjacent to a waterway.

The following are the goals and policies from the *Santa Rosa Citywide Creek Master Plan* that are applicable to the Project.

SW-1 Maintain hydraulic capacity of creeks.

SW-1-3 Balance habitat restoration and hydraulic capacity. Provide a detailed hydraulic analysis for every project component affecting flood conveyance prior to implementation to identify allowable "roughness" values and to interpret those values in the form of a vegetation planting and monitoring plan. Consider use of detention basins and diversion channels where appropriate to maintain hydraulic capacity.

SW-2 Implement the Storm Water Low Impact Development Technical Design Manual.

SW-2-1 New development and redevelopment projects shall comply with the City NPDES storm water permit and with the Storm Water Low Impact Development Technical Design Manual.

WQ-2 Use a combination of Storm Water Best Management Practices, constructed devices, and biological systems, to remove pollutants and protect water quality.

WQ-2-2 Implement the Storm Water Low Impact Development Technical Design Manual to reduce pollutants and runoff flows from new development and redevelopment projects.

3.8.4 Evaluation Criteria and Significance Thresholds

Table 3.8-1 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
HWQ-1: Would the Project violate any water quality standards or waste discharge requirements?	Non-compliance with Waste Discharge Requirements for Low Threat Discharges to Surface Waters in the North Coast Region. Non-compliance with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities. Non-compliance with the City of Santa Rosa NPDES Storm Water Permit.	CEQA Guidelines Appendix G, Checklist Item VIII (a) State Water Resources Control Board Order No. 2009-0009, as amended by Order No. 2012-0006 North Coast Regional Water Quality Control Board Order No. R1-2009-0045 North Coast Regional Water Quality Control Board Order No. R1-2009-0050 Santa Rosa Low Impact Development Technical Design Manual
HWQ-2: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge.	Creation of a deficit in aquifer volume or lowering of groundwater levels. Creation of a substantial amount of new impervious surfaces that would interfere with groundwater recharge.	CEQA Guidelines Appendix G, Checklist Item VIII (b)
HWQ-3: Would the Project provide substantial additional sources of polluted runoff or otherwise substantially degrade water quality?	Uncontrolled runoff from construction sites. Non-compliance with City storm water requirements.	CEQA Guidelines Appendix G, Checklist Item VIII (e)(f) North Coast Regional Water Quality Control Board Order No. R1-2009-0050 Santa Rosa Low Impact Development Technical Design Manual
HWQ-4: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site, or increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or exceed the capacity of existing or planned stormwater drainage systems?	Non-compliance with City storm water requirements. Creation of increased quantity of runoff such that capacity of storm drains would be exceeded.	CEQA Guidelines Appendix G, Checklist Item VIII (c), (d), (e) North Coast Regional Water Quality Control Board Order No. R1-2009-0050 Santa Rosa Low Impact Development Technical Design Manual

Areas of No Project Impact

The Project would not result in impacts related to several checklist questions contained in Appendix G of the current CEQA Guidelines. For the reasons presented below, the following evaluation criteria are not applicable to the Project.

- ***Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.***

  The Project does not include the construction of new housing or structures for human occupancy. Therefore, this significance criterion is not applicable to the Project and is not discussed further.

- ***Place within a 100-year flood hazard area structures which would impede or redirect flood flows.***

  The Project does not include the construction or placement of structures within a 100-year flood hazard area. Therefore, this significance criterion is not applicable to the Project and is not discussed further.

- ***Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.***

  As shown on Figure 12-4 of the Santa Rosa General Plan, the Project does not include the construction of structures within a dam inundation area (Santa Rosa 2009). Therefore, this significance criterion is not applicable to the Project and is not discussed further.

- ***Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow.***

  The Project is not located near an isolated body of water that may be affected by a seiche, is not located within a tsunami inundation area based on mapping prepared by the California Emergency Management Agency (Cal EMA 2009), and is not located within a debris-flow source area based on landslide mapping prepared by the United States Geological Survey (USGS 1997). Therefore, this significance criterion is not applicable to the Project and is not discussed further.

3.8.5 Methodology

Water quality standards consist of designated beneficial uses, the water quality objectives to protect those designated uses, implementation of federal and State policies for antidegradation, and general policies for application and implementation (NCRWQCB 2011). Applicable water quality standards and objectives for the Project area are included in the current 2011 Basin Plan prepared by the NCRWQCB, and include a compilation of objectives adopted by the State Water Board, the RWQCB, and other state and federal agencies (NCRWQCB 2011). Water quality standards and objectives are achieved primarily through the establishment of NPDES permits and waste discharge requirements (NCRWQCB 2011). Therefore, to evaluate whether construction or operation of the Project would result in a violation of water quality standards or waste discharge requirements, Project compliance with potentially applicable NPDES permits or waste discharge requirements is evaluated. Construction and operation of the Project is also evaluated to determine compliance with applicable federal, State, and local permitting and design requirements related to flooding and drainage.

To evaluate whether construction or operation of the Project would impact groundwater, the extent of excavation dewatering that may be required during construction is evaluated to investigate the potential for aquifer depletion and well interference impacts, and the amount of new impervious surfaces that would be created are evaluated for their potential to interfere with groundwater recharge. The evaluation also considers additional runoff from new impervious areas, and whether such increases would increase flooding at or downstream of the Project area. Regional documents and maps were reviewed to identify hydrology and water quality resources that could be directly or indirectly affected by construction or operational activities.

3.8.6 Impacts and Mitigation Measures

Table 3.8-2 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.	
HWQ-1: Would the Project violate any water quality standards or waste discharge requirements?	LSM	LSM	LSM	LSM
HWQ-2: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or lowering of the local groundwater table level.	LS	LS	LS	LS
HWQ-3: Would the Project provide substantial additional sources of polluted runoff or otherwise substantially degrade water quality?	LS	LS	LS	LSM
HWQ-4: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site, or increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or exceed the capacity of existing or planned stormwater drainage systems?	LS	LS	LS	LS
HWQ-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to hydrology and water quality?	LS	LS	LS	LS

Notes: LS = Less than Significant
LSM = Less than Significant with Mitigation

Impact: **HWQ-1: Would the Project violate any water quality standards or waste discharge requirements?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

<u>Construction and Operation</u>

State Water Resources Control Board Order No. 2009-0009, as amended by Order No. 2012-0006

SWRCB Order No. 2009-0009, as amended by Order No. 2012-0006, adopted for the purpose of protecting the water quality of storm water runoff, applies to public and private construction projects that include one or more acres of soil disturbance. In comparison, the Preferred Project would disturb approximately 0.57 acre, which would include 0.35 acre for construction of the at-grade rail crossing at Jennings Avenue, and 0.22 acre for closure of a rail crossing at W. Sixth, W. Seventh, or W. Eighth Street. Because construction of the Preferred Project would not disturb one or more acres of land, compliance under Order No. 2009-0009 would not be required.

North Coast Regional Water Quality Control Board Order No. R1-2009-0045

NCRWQCB Order No. R1-2009-0045 regulates short-term discharges of clean or relatively pollutant-free wastewaters to surface waters, such as groundwater from construction dewatering. Often, groundwater generated during dewatering activities is relatively clean, but contains elevated levels of sediment and turbidity, which if discharged to the storm drain system or to surface waters, could result in localized impacts to water quality. Because construction of the Preferred Project does not require particularly deep excavations (less than five feet), it is possible that groundwater would not be encountered during trenching and other excavations. If needed, the Project would dispose of groundwater from dewatering via the sewer, the storm drain, or into Steele Creek.

In the event that groundwater is encountered during construction, temporary groundwater dewatering would be necessary, and if such groundwater were to be discharged to the storm drain system or Steele Creek, then compliance with NCRWQCB Order No. R1-2009-0045 would be required. Therefore, in the event that construction of the Preferred Project requires groundwater dewatering, and the groundwater generated during the dewatering is discharged to Steele Creek or the local storm drain system, turbid groundwater could affect Steele Creek and/or downstream waters in Piner Creek and Santa Rosa Creek, and the Project would conflict with Order No. R1-2009-0045; the impact would be significant.

North Coast Regional Water Quality Control Board Order No. R1-2009-0050

NCRWQCB Order No. R1-2009-0050 is the City of Santa Rosa's current NPDES municipal storm water permit, which regulates both storm water and non-storm water discharges into the municipal storm drain system. The permit applies to both public and private construction projects, and includes requirements for implementation of a minimum set of BMPs at construction sites, with specific combinations of BMPs required at sites less than 1 acre in size. As summarized in Chapter 2, Project Description, Section 2.4.5 (Project Measures),

implementation of Project Measure 3 (Implement Storm Water Control Measures during Construction) is included as part of the Project. Project Measure 3 requires implementation of required BMPs during construction in accordance with the City's storm water permit. With implementation of Project Measure 3, the Preferred Project would comply with the City's specified set of BMPs for construction sites less than 1 acre in size, including preserving existing vegetation to the extent practical, sediment controls, silt fencing, sand bag barriers, and stabilized construction site entrances and exits. Storm water BMPs would also be required for materials management, including material delivery and storage, stockpile management, spill prevention and control, and management of solid waste, concrete waste, and sanitary/septic waste. With implementation of Project Measure 3, construction activities associated with the Preferred Project would comply with the City's NPDES storm water permit, and the impact of construction-phase discharges on water quality standards and waste discharge requirements would be less than significant.

The City's Storm Water LID Manual provides technical guidance for project designs that require the implementation of permanent storm water BMPs in accordance with the City's NPDES storm water permit. Such projects include those that create or replace a combined total of one acre or more of impervious surface, and new streets that create or replace 10,000 square feet or more of impervious surface. Projects that are exempt from the City's LID requirements include stand-alone pedestrian pathways, trails, and off-street bicycle lanes (Santa Rosa 2011).

In comparison, the Preferred Project would result in approximately 3,700 square feet of new and replaced impervious surfaces, which would consist of the paved pathway and crossing surfaces for the at-grade rail crossing at Jennings Avenue. A rail crossing closure at either W. Sixth, W. Seventh, or W. Eighth Street would not result in a net increase in impervious surfaces, but rather, a slight decrease in such surfaces from the removal of roadway surface. Because the Preferred Project would not create or replace one acre or more of impervious surface, and would not result in new street sections that create or replace 10,000 square feet or more of impervious surface, the Preferred Project would not be subject to the low impact development storm water requirements required by the City's municipal storm water permit. Additionally, in accordance with the City's Storm Water LID Manual, off-street bicycle paths are considered exempt from the City's low impact development requirements (Santa Rosa 2011).

Operation of the Preferred Project would not result in a new point discharge, and no other applicable waste discharge requirements are anticipated to apply to the Preferred Project. Therefore, operation of the Preferred Project would be consistent with Order No. R1-2009-0050, and no impact would occur.

Mitigation: **Mitigation Measure HWQ-1: Manage Construction Dewatering *(Preferred Project and Rail Overcrossing Alternative)***

If construction dewatering is required, the City shall evaluate reasonable options for dewatering management that would avoid discharging to a local surface water or storm drain. The following management options shall be considered:

- Reuse the water on-site for dust control, compaction, or irrigation.
- Retain the water on-site in a grassy or porous area to allow infiltration/evaporation.
- Discharge (by permit) to a sanitary sewer.

If discharging to the sanitary sewer, the City shall comply with a one-time discharge permit or other type of approval requiring, as necessary, measures for characterizing the discharge and ensuring filtering methods and monitoring to verify that the discharge is compliant with the City's local wastewater discharge requirements.

If discharging to a local surface water or storm drain, the City shall obtain coverage under NCRWQCB Order No. R1-2009-0045, Waste Discharge Requirements for Low Threat Discharges to Surface Waters in the North Coast Region. The City shall submit permit registration documents to the NCRWQCB, including development of a Best Management Practices/Pollution Prevention Plan to characterize the discharge and to identify specific measures to control the discharge, such as sediment controls to ensure that excessive sediment is not discharged, and flow controls to prevent erosion and flooding downstream of the discharge. The City shall ensure that the Contractor oversees implementation of the Best Management Practices/Pollution Prevention Plan during construction dewatering activities, including visual inspections and ensuring overall compliance.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Implementation of Mitigation Measure HWQ-1 would mitigate potential impacts on water quality standards and waste discharge requirements from construction dewatering, if needed, to a less-than-significant level by avoiding discharges to the storm drain system, or, if such discharges are required, ensuring compliance with applicable waste discharge requirements such that the discharge would not disrupt or pollute waterways.

Analysis: *Rail Overcrossing Alternative (Significant)*

Construction

State Water Resources Control Board Order No. 2009-0009, as amended by Order No. 2012-0006

SWRCB Order No. 2009-0009 applies to public and private construction projects that include one or more acres of soil disturbance. Because the Rail Overcrossing Alternative is anticipated to disturb approximately 1.25 acres of land, compliance with Order No. 2009-0009 would be required. Therefore, if construction activities associated with the Rail Overcrossing Alternative are not properly managed, applicable water quality standards and waste discharge requirements could be violated. The impact is considered significant.

North Coast Regional Water Quality Control Board Order No. R1-2009-0045

Construction of the foundations for the Rail Overcrossing Alternative would encounter groundwater during construction, and temporary groundwater would be required. Temporary groundwater dewatering may also be required during

open-trench construction associated with utility relocations and conduit extensions. Similar to the discussion of an at-grade rail crossing, if such groundwater were discharged to Steele Creek or the local storm drain system, turbid groundwater could affect Steele Creek and/or downstream waters in Piner Creek, and the Project would conflict with Order No. R1-2009-0045; the impact would be significant.

North Coast Regional Water Quality Control Board Order No. R1-2009-0050

Similar to the discussion of an at-grade rail crossing, Project Measure 3 (Implement Storm Water Control Measures during Construction) would be included as part of the Rail Overcrossing Project, which requires implementation of required BMPs during construction in accordance with the City's storm water permit. With implementation of Project Measure 3, the Rail Overcrossing Alternative would comply with the City's specified set of BMPs for construction sites greater than 1 acre in size, including controls to minimize erosion and sedimentation, to prevent tracking of sediment onto public roads and non-storm water discharges, and to properly manage material deliveries and wastes during construction. With implementation of Project Measure 3, construction activities associated with the Rail Overcrossing Alternative would comply with the City's NPDES storm water permit, and the impact would be less than significant.

<u>Operation</u>

North Coast Regional Water Quality Control Board Order No. R1-2009-0050

The City's Storm Water LID Manual provides technical guidance for project designs that require the implementation of permanent storm water BMPs in accordance with the City's NPDES storm water permit. Such projects include those that create or replace a combined total of one acre or more of impervious surface, and new streets that create or replace 10,000 square feet or more of impervious surface. Projects that are exempt from the City's LID requirements include stand-alone pedestrian pathways, trails, and off-street bicycle lanes (Santa Rosa 2011).

In comparison, the Rail Overcrossing Alternative would result in approximately 0.4 acre of new and replaced impervious surfaces, which would consist of the overcrossing structure, sidewalks, and driveways. In accordance with the City's Storm Water LID Manual, street overlays, resurfacing, trenching, and patching are considered a maintenance activity and are exempt. Reconstruction is defined in the Storm Water LID Manual as work that replaces road surface down to subgrade. Because the Rail Overcrossing Alternative would not create or replace one acre or more of impervious surface, and would not result in new street sections that create or replace 10,000 square feet or more of impervious surface, it would not be subject to the low impact development storm water requirements required by the City's municipal storm water permit. Additionally, in accordance with the City's Storm Water LID Manual, off-street bicycle paths are considered exempt from the City's low impact development requirements (Santa Rosa 2011).

Operation of the Rail Overcrossing Alternative would not result in a new point discharge, and no other applicable waste discharge requirements are anticipated

to apply to the project. Therefore, operation of the Project would be consistent with Order No. R1-2009-0050, and no impact would occur.

Mitigation: **Mitigation Measure HWQ-1: Manage Construction Dewatering *(Preferred Project and Rail Overcrossing Alternative)***

This mitigation measure is defined above for the Preferred Project.

Mitigation Measure HWQ-2: Manage Construction Storm Water *(Rail Overcrossing Alternative)*

If construction of the Rail Overcrossing Alternative disturbs more than one acre of soil, the City shall obtain coverage under State Water Resources Control Board Order No. 2009-0009-DWQ, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities, as amended by Order No. 2012-0006. The City shall submit permit registration documents (notice of intent, risk assessment, site maps, Storm Water Pollution Prevention Plan, annual fee, and certifications) to the State Water Resources Control Board. The Storm Water Pollution Prevention Plan shall address pollutant sources, non-storm water discharges resulting from construction dewatering, best management practices, and other requirements specified in the above-mentioned Order. The Storm Water Pollution Prevention Plan shall also include dust control practices to prevent wind erosion, sediment tracking, and dust generation by construction equipment. A Qualified Storm Water Pollution Prevention Plan Practitioner shall oversee implementation of the Plan, including visual inspections, sampling and analysis, and ensuring overall compliance.

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

Implementation of Mitigation Measures HWQ-1 and HWQ-2 would mitigate potential impacts on water quality standards and waste discharge requirements from construction dewatering and general construction activities to a less-than-significant level by avoiding discharges to the storm drain system, or, if such discharges are required, ensuring compliance with applicable waste discharge requirements such that the discharge would not disrupt or pollute waterways.

Impact: HWQ-2: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or lowering of the local groundwater table level?

Analysis: Preferred Project – At-grade Rail Crossing (Less than Significant)

<u>Construction</u>

Construction of the Preferred Project could require temporary groundwater dewatering if water accumulates within an excavation area. Temporary groundwater dewatering would involve the pumping of groundwater in a localized area to lower the water level to just below the bottom of the excavation. The deepest excavations anticipated for construction of an at-grade rail crossing at Jennings Avenue would be for extension of electrical conduits, which could require excavating down to approximately five feet below the ground surface.

Construction associated with closure of a rail crossing at W. Sixth, W. Seventh, or W. Eighth Street is anticipated to require excavations less than three feet below the ground surface associated with removal of existing crossing surfaces. Because construction of the Preferred Project does not require particularly deep excavations, it is possible that groundwater would not be encountered during trenching and other excavations. However, in the event that groundwater is encountered during construction, temporary groundwater dewatering would be required. Such temporary dewatering would have, at most, a very small effect on localized water levels in the immediate vicinity of the excavation, and no substantial deficit in aquifer volume or lowering of water levels would occur. The impact would be less than significant.

Construction activities associated with the Preferred Project would be temporary in nature, and would have a very small effect on groundwater recharge. The impact would be less than significant.

Operation

Operation of the Preferred Project would not directly utilize groundwater, and would not result in an increase in population or employment that would indirectly increase groundwater demand. Therefore, the Preferred Project would not create a deficit in aquifer volume or a lowering of water levels. No impact would occur.

The Preferred Project would result in approximately 3,700 square feet of new impervious surfaces, which would consist of the paved pathway and crossing surfaces for the at-grade rail crossing at Jennings Avenue. A rail crossing closure at W. Sixth, W. Seventh, or W. Eighth Street would not result in a net increase in impervious surfaces, but rather, a slight decrease in such surfaces from the removal of roadway surface. Because the Preferred Project would result in only minor increases in impermeable surfaces, it would have, at most, only a very small effect on groundwater recharge. The impact would be less than significant.

Mitigation: No mitigation is needed.

Analysis: *Rail Overcrossing Alternative (Less than Significant)*

Construction

Construction of the foundations for the columns supporting the elevated overcrossing would encounter groundwater during construction, requiring temporary groundwater dewatering. The dewatering associated with the foundation drilling would extract groundwater present within the drilled-hole both during the auguring process and to allow for placement of concrete. Based on the depth and diameter of the drilled piers, it is anticipated that up to 4,000 gallons of groundwater may be pumped from a drilled-hole when backfilling with concrete. Because the foundation drilling would not require active dewatering of the drilled-hole to lower water levels, such dewatering would have, at most, a very small effect on localized water levels. The impact would be less than significant.

Temporary groundwater dewatering may also be required during open-trench construction associated with utility relocations. For utility relocations, temporary groundwater dewatering would involve pumping of groundwater in a localized area to lower the water level to just below the bottom of the excavation. The deepest excavations anticipated for construction of utility relocations and extensions are anticipated to be approximately eight feet below the ground surface. Because of the temporary nature of the dewatering associated with utility relocations, and the modest depths to which groundwater would need to be lowered, such dewatering would have, at most, a very small effect on localized water levels in the immediate vicinity of the excavation, and no substantial deficit in aquifer volume or lowering of water levels would occur. The impact would be less than significant.

<u>Operation</u>

Operation of the Rail Overcrossing Alternative would not directly utilize groundwater, and would not result in an increase in population or employment that would indirectly increase groundwater demand. Therefore, the Rail Overcrossing Alternative would not create a deficit in aquifer volume or a lowering of water levels. No impact would occur.

The Rail Overcrossing Alternative would result in approximately 0.4 acre of new impervious surfaces, which would consist of the overcrossing surfaces, sidewalks, driveways, and new roadway and sidewalk surfaces. Because the Rail Overcrossing Alternative would result in only minor increases in impermeable surfaces, it would have, at most, only a very small effect on groundwater recharge. The impact would be less than significant.

Mitigation: No mitigation is needed.

Impact: **HWQ-3: Would the Project provide substantial additional sources of polluted runoff or otherwise substantially degrade water quality?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

<u>Construction</u>

Construction activities associated with the Preferred Project could result in sources of polluted runoff. For example, construction requires the disturbance of soil that can result in erosion or sedimentation, as well as the use of chemicals and materials, such as concrete, mortar, asphalt, fuels, and lubricants, which can be inappropriately discharged to storm drains and waterways if not properly managed, thereby degrading water quality. As summarized in Chapter 2, Project Description, Section 2.4.5 (Project Measures), implementation of Project Measure 3 (Implement Storm Water Control Measures during Construction) is included as part of the Project. Project Measure 3 requires implementation of required BMPs during construction in accordance with the City's storm water permit. With implementation of Project Measure 3, the Preferred Project would comply with the City's specified set of BMPs for construction sites less than 1 acre in size, including preserving existing vegetation to the extent practical, erosion and sediment controls, stabilized construction site entrances and exits, and management of non-storm water discharges. Project Measure 3 would also

require storm water BMPs for materials management, including material delivery and storage, stockpile management, spill prevention and control, and management of solid waste, concrete waste, and sanitary/septic waste. With implementation of Project Measure 3, construction activities associated with the Preferred Project would be required to comply with the City's NPDES storm water permit, and the potential for construction activities to result in substantial sources of polluted runoff or to degrade water quality would be less than significant.

Operation

Operation of the Preferred Project would not result in a point discharge of storm water runoff. Pedestrian and bicycle pathways are not a land use type that typically results in polluted runoff. In addition, because the Preferred Project would not create or replace one acre or more of impervious surface, and would not result in new street sections that create or replace 10,000 square feet or more of impervious surface, the Preferred Project would not be required to implement permanent LID measures. Therefore, because the Preferred Project would not result in a new point discharge of runoff, would not result in substantial amounts of new impervious surfaces, and would not result in a land use that typically results in polluted runoff, the potential for operational activities to provide substantial additional sources of polluted runoff or otherwise substantially degrade water quality would be less than significant.

Mitigation: No mitigation is needed.

Analysis: *Rail Overcrossing Alternative (Significant)*

Construction

Construction activities associated with the Rail Overcrossing Alternative could result in sources of polluted runoff, including chemicals and materials, such as concrete, mortar, asphalt, fuels, drilling fluids, and lubricants, which could be inappropriately discharged to Steele Creek, if not properly managed. Specifically, construction of the foundations for the Rail Overcrossing Alternative would require the use either of steel casings or drilling muds to keep the hole open. If drilling muds are used, they would be contained and conveyed to the hole via hydraulic hoses. Connection and disconnection of hoses could result in spills of drilling fluids in the immediate vicinity of Steele Creek on the east side of the corridor.

Similar to the discussion of an at-grade rail crossing, Project Measure 3 (Implement Storm Water Control Measures during Construction) would be included as part of the Rail Overcrossing Project, which would require controls to minimize sources of polluted runoff, including spill prevention/control and management of wastes, such as drilling muds. With implementation of Project Measure 3, construction activities associated with the Rail Overcrossing Alternative would be required to comply with the City's NPDES storm water permit, which would reduce the potential for construction activities to result in substantial sources of polluted runoff or to degrade water quality.

However, the potential impact to water quality from the possible use of drilling fluids during construction of the rail overcrossing foundations is considered significant.

Operation

Operation of the Rail Overcrossing would not result in a point discharge of storm water runoff. In addition, because the Rail Overcrossing Alternative would not create or replace one acre or more of impervious surface, and would not result in new street sections that create or replace 10,000 square feet or more of impervious surface, it would not be required to implement permanent LID measures. Therefore, because the Rail Overcrossing Alternative would not result in a new point discharge of runoff, would not result in substantial amounts of new impervious surfaces, and would not result in a land use that typically results in polluted runoff, the potential for operational activities to provide substantial additional sources of polluted runoff or otherwise substantially degrade water quality would be less than significant.

Mitigation: **Mitigation Measure HWQ-3: Manage Drilling Fluids *(Rail Overcrossing Alternative)***

If the contractor proposes to use drilling muds rather than casings, the City shall require the contractor to submit a project-specific Drilling Plan that would include best management practices for avoidance of discharges to Steele Creek adjacent to the east side of the rail corridor, and to the municipal storm water system. Measures shall include, but would not be limited to:

- Established set-backs from Steele Creek for drilling of foundations along the east side of the rail corridor such that no drilling fluids would be spilled within 20 feet of the creek;
- Measures for protecting storm drain inlets to ensure that no drilling fluids are discharged to the storm drain system;
- Measures for containing, treating, and disposing of waste drilling fluids/cuttings slurry;
- Process for attaching and detaching hydraulic hoses;
- Contingency plans to address any inadvertent fluid returns; and
- Specifications for drilling fluids mixing, pumping and recycling equipment.

The City shall ensure that the site is inspected during use of the drilling muds and, if discharges to Steele Creek are found to occur, then the City shall undertake additional protective measures to ensure avoidance of discharges to surface waters.

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

Implementation of Mitigation Measure HWQ-3 would mitigate potential impacts on water quality during foundation drilling to a less than significant level by requiring the contractor to develop and implement a drilling plan that specifies the techniques to minimize the risk of drilling fluids during construction on aquatic environments.

Impact: **HWQ-4: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site, or increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or exceed the capacity of existing or planned stormwater drainage systems?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

Construction

Construction of the Preferred Project and the Rail Overcrossing Alternative may require placement of fill within a portion Steele Creek on the east side of the rail corridor at Jennings Avenue to stabilize a temporary passage way for construction equipment. This may include rip-rap, steel plates, or other similar type of stabilization measures, to support the pathway improvements over the existing storm drain box culvert. Construction activities within and adjacent to Steele Creek could result in erosion and siltation if excavation, grading, and disturbed soils were not properly managed or protected. The construction area for the Preferred Project is primarily developed with rail corridor, roadway pavements, and other hardscapes. However, tree removal and grading along the east side of the rail corridor at Jennings Avenue could increase the rate and amount of surface runoff that occurs to Steele Creek.

As summarized in Chapter 2, Project Description, Section 2.4.5 (Project Measures), implementation of Project Measure 3 (Implement Storm Water Control Measures during Construction) is included as part of the Project. Project Measure 3 requires implementation of required BMPs during construction in accordance with the City's storm water permit. With implementation of Project Measure 3, the Preferred Project and the Rail Overcrossing Alternative would comply with the City's specified set of BMPs for construction sites, including preserving existing vegetation to the extent practical, erosion and sediment controls, stabilized construction site entrances and exits, management of non-storm water discharges, and management of material deliveries and wastes.

With implementation of Project Measure 3, construction activities associated with the Preferred Project and the Rail Overcrossing Alternative would be required to comply with the City's NPDES storm water permit, and the potential for construction activities to result in substantial erosion or siltation, or to increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or exceed the capacity of existing or planned stormwater drainage systems, would be less than significant.

Operation

The Preferred Project and the Rail Overcrossing Alternative would not substantially change existing drainage patterns. The Project areas are not located within a 100-year floodplain. In addition, Steele Creek within and downstream of the Project area is not known to experience periodic flooding (SCWA 2014).

At the Jennings Avenue at-grade rail crossing, storm water runoff would sheet flow off the sides of the pedestrian pathway. At W. Sixth, W. Seventh, or W. Eighth Street, runoff would continue to sheet flow off the crossing areas into surrounding storm drains. For the Rail Overcrossing Alternative, storm water runoff would sheet flow off the ramps, and storm water runoff along Jennings Avenue would continue to be conveyed to the storm drain system through curb and gutters. Because operation of the Preferred Project and the Rail Overcrossing Alternative would not directly alter the course of a stream or river, and would not substantially alter existing drainage patterns, the potential for substantial erosion or siltation to occur during operation would be less than significant.

The City's Storm Water LID Manual provides technical guidance for project designs that require the implementation of permanent storm water BMPs in accordance with the City's NPDES Storm Water Permit. Such projects include those that create or replace a combined total of one acre or more of impervious surface, and new streets that create or replace 10,000 square feet or more of impervious surface. Projects that are exempt from the City's LID requirements include stand-alone pedestrian pathways, trails, and off-street bicycle lanes (Santa Rosa 2011).

In comparison, the Preferred Project would result in approximately 0.08 acre (3,700 square feet) of new impervious surfaces, which would consist of the paved pathway and crossing surfaces for the at-grade rail crossing at Jennings Avenue. A rail crossing closure at W. Sixth, W. Seventh, or W. Eighth Street would not result in any net increase in impervious surfaces, but rather, a slight decrease in such surfaces from the removal of roadway surface. The Rail Overcrossing Alternative would result in approximately 0.4 acre of new impervious surfaces, which would consist of the overcrossing structure, sidewalks, and driveways.

Therefore, because the Preferred Project and the Rail Overcrossing Alternative would not create or replace one acre or more of impervious surface, and would not result in new street sections that create or replace 10,000 square feet or more of impervious surface, the Preferred Project and the Rail Overcrossing Alternative would not be subject to the low impact development storm water requirements required by the City's municipal storm water permit. Additionally, in accordance with the City's Storm Water LID Manual, off-street bicycle paths are considered exempt from the City's low impact development requirements (Santa Rosa 2011).

Because operation of the Preferred Project and the Rail Overcrossing Alternative would not result in substantial amounts of new impervious surfaces, the potential to increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or exceed the capacity of existing or planned stormwater drainage systems, would be less than significant.

Mitigation: No mitigation is needed.

3.8.7 Cumulative Impacts

Impact: **HWQ-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to hydrology and water quality?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

The cumulative projects identified in Section 3.0, Environmental Setting, Impacts, and Mitigation Measures, Table 3-1 (Projects Considered for Cumulative Impacts), would be subject to existing federal, state, and local regulations. Existing municipal policies, including the City's Storm Water LID Manual, for project design and approval, as well as NCRWQCB regulations, would minimize potential impacts to a less-than-significant level.

Implementation of the Project plus the cumulative projects would not result in a significant cumulative impact on hydrology and water quality. Therefore, cumulative impacts would be less than significant.

Mitigation: No mitigation is needed.

3.8.8 References

Association of Bay Area Governments (ABAG). 2014. *Flood Zones Map.* October.

California Emergency Management Agency (Cal EMA). 2009. *Tsunami Inundation Emergency Planning Map for the San Francisco Bay Region*.

Federal Emergency Management Agency (FEMA). 2014. *FEMA's Flood Map Service Center.* Website Accessed at: www.fema.gov.

North Coast Regional Water Quality Control Board (NCRWQCB). 2009. *Order No. R1-2009-0050, Waste Discharge Requirements for the City of Santa Rosa, the County of Sonoma, and the Sonoma County Water Agency*.

NCRWQCB. 2011. *Water Quality Control Plan for the North Coast Region*. May.

NCRWQCB. 2013. Website Accessed November 12, 2013 at: http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/russian_river/

NCRWQCB. 2014. *Resolution No. R1-2014-0006, Amending the Water Quality Control Plan for the North Coast Region to include the Policy for the Implementation of the Water Quality Objectives for Temperature.*

Santa Rosa, City of (Santa Rosa). 2009. *Santa Rosa General Plan 2035*. November 3.

Santa Rosa. 2010. *City of Santa Rosa 2010 Urban Water Management Plan*. June.

Santa Rosa. 2011. *Storm Water Low Impact Development Technical Design Manual*. August.

Santa Rosa. 2013. *Santa Rosa Citywide Creek Master Plan*. August.

Sonoma County Water Agency (SCWA). 2014. Personal Communication, Phil Wadsworth, May 2014.

State Water Resources Control Board (SWRCB). 2010. *2010 CWA Section 303(d) List of Water Quality Limited Segments*.

United States Geologic Survey (USGS). 1997. *Principal Debris-Flow Source Areas in the San Francisco Bay Region*.

3.9 Land Use and Planning

This section evaluates the potential impacts related to land use and planning during construction and operation of the Project. To provide the basis for this evaluation, the Setting section provides an overview of the land use and regulatory framework that is applicable to the Project. The evaluation section establishes the thresholds of significance, evaluates potential land use impacts, and identifies appropriate mitigation measures, as necessary.

3.9.1 Impacts Evaluated in Other Sections

The following subjects are related to land use and planning, but are evaluated in other sections of this document:

- Potential impacts related to visual character and quality of the Project, the site, and its surroundings are evaluated in Section 3.1, Aesthetics.
- Potential impacts related to historical resources and historic districts are evaluated in Section 3.4, Cultural Resources.
- Potential impacts related to Project-generated noise and sensitive receptors are evaluated in Section 3.10, Noise.
- Potential impacts related to recreational facilities are evaluated in Section 3.11, Public Services and Recreation.
- Potential impacts related to traffic and performance of pedestrian, bicycle, and transit facilities, and designations of bicycle lanes and pedestrian corridors are evaluated in Section 3.12, Transportation.

3.9.2 Setting

Existing Land Uses

The existing land uses immediately adjacent to the Jennings Avenue Project area include the Sonoma-Marin Area Rail Transit (SMART) rail corridor, the Sonoma County Water Agency (SCWA) maintenance road for Steele Creek, and the Jennings Avenue roadway. Jennings Avenue currently terminates on either side of the SMART rail corridor, and guard rails block the end of Jennings Avenue on either side to prevent vehicular access. Land uses to the west of the Jennings Avenue Project area include multi-family residential housing, a business park, and Helen M. Lehman Elementary School, which is located on Jennings Avenue approximately one-half mile to the west. Land uses to the east include multi-family residential housing and a childcare center and preschool (Little People's Playhouse). The site for the North Santa Rosa SMART station is approximately one-quarter mile to the north along Guerneville Road and the Coddingtown Mall is located approximately one-quarter mile to the northeast.

The potential W. Sixth Street, W. Seventh Street and W. Eighth Street crossing closures are located in the West End and Railroad Square neighborhoods in downtown Santa Rosa, with W. Sixth Street serving as the dividing line between the two neighborhoods. Please refer to the Cultural Resources section for a description of the historic nature of these neighborhoods. W. Sixth, W. Seventh, and W. Eighth Streets are east-west oriented streets west of Highway 101, located within the West End neighborhood west of downtown Santa Rosa. W. Seventh Street terminates at Davis Street and W. Eighth Street terminates at the Highway 101 freeway on-ramp. W. Sixth Street connects to the Courthouse Square area of downtown via a Highway 101

underpass. Land uses immediately adjacent to the potential crossing closure locations include commercial businesses, restaurants, community services, warehouses, and a rail yard. Land uses in the vicinity of the potential crossing closure locations include a performing arts center (Sixth Street Playhouse), a teen center (Chop's), single and multi-family residences, warehouses, commercial businesses, and restaurants. The downtown SMART station is located approximately 500 feet to the south of the W. Sixth Street potential closure site at Wilson and Fourth Streets.

General and Specific Plan Land Use Designations

The City has adopted the Santa Rosa General Plan 2035. A general plan is the official policy document regarding the location of housing, business, industry, roads, parks, and other planned uses. The Project sites do not have a General Plan land use designation since they are located within the public and SMART right-of-ways.

The City has also adopted specific plans, which are mechanisms to implement the General Plan by providing more detailed direction to guide development within a specific area of the City. The Project sites do not have a specific plan land use designation, because they are located within the public and SMART rights-of-way.

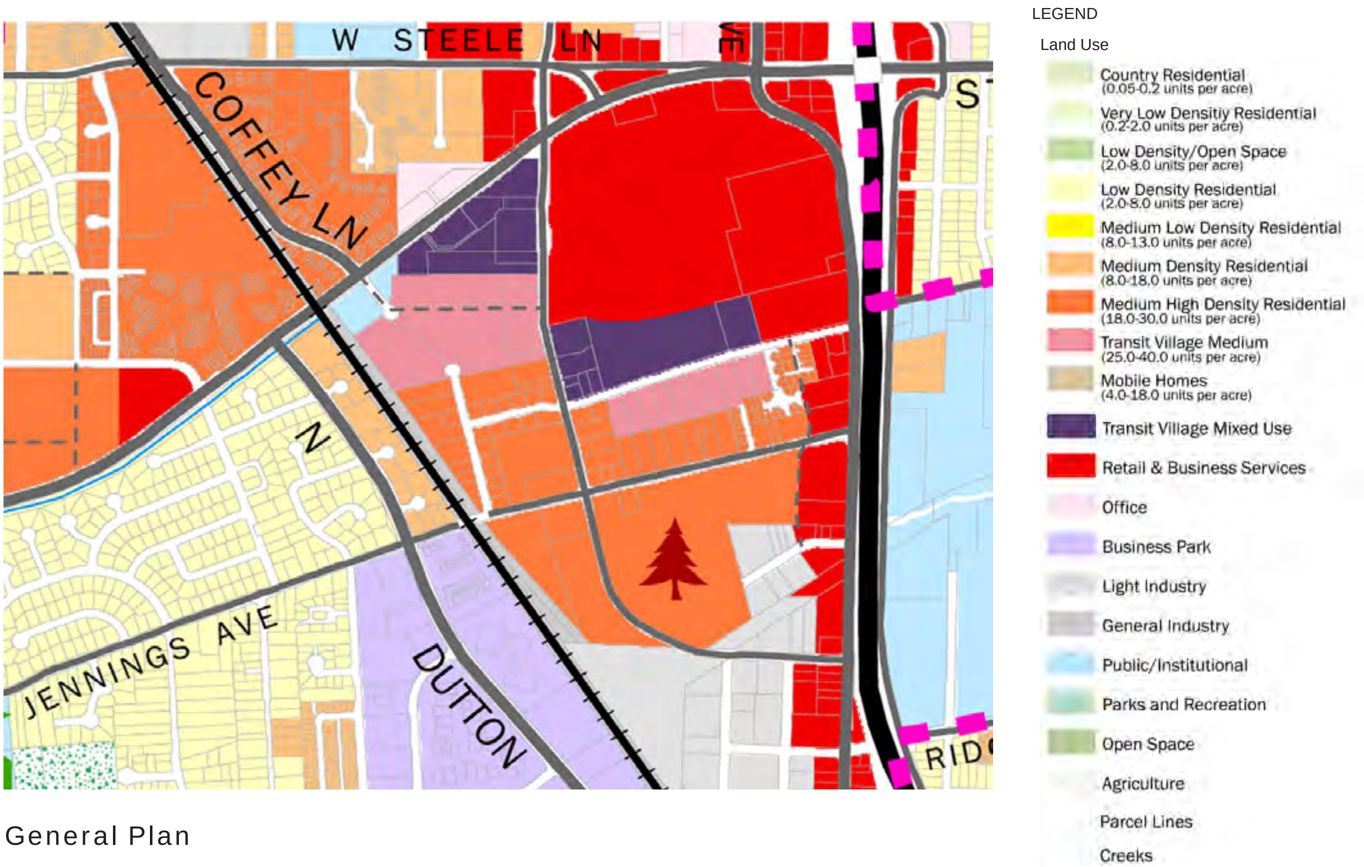
Figure 3.9-1 (Jennings Project Area Land Use Designations) shows the land use designations in the area surrounding the Jennings Avenue Project area from the City of Santa Rosa General Plan and the North Santa Rosa Station Area Specific Plan. The General Plan land use designations adjacent to the Jennings Avenue Project area are Medium Density Residential to the northwest, Medium-High Density Residential to the northeast and southeast, and Business Park to the southwest of the railroad corridor (Santa Rosa 2014). The North Santa Rosa Station Area Specific Plan land use designations adjacent to the Jennings Avenue Project area are Medium Density Residential and Business Park to the northwest and southwest of the rail corridor, respectively, and Medium High Density Residential to the east.

Figure 3.9-2 (Potential Crossing Closure Project Area Land Use Designations) illustrates the land use designations for the areas around the crossing closure area at W. Sixth, W. Seventh, and W. Eighth Street from the City of Santa Rosa General Plan and the Downtown Station Area Specific Plan. The General Plan land use designation of the parcels adjacent to the W. Seventh Street and W. Eighth Street closure sites is Transit Village Medium on both sides of the railroad corridor. The land use designations adjacent to the closure site at W. Sixth Street are Transit Village Medium to the north and Transit Village Mixed Use to the south (Santa Rosa 2014). The Downtown Station Area Specific Plan land use designations adjacent to the closure site at W. Sixth Street are Transit Village Medium to the north and Transit Village Mixed Use to the south. The land use designations of the parcels adjacent to the W. Seventh Street and W. Eighth Street closure sites is Transit Village Medium to the east and west of the railroad corridor.

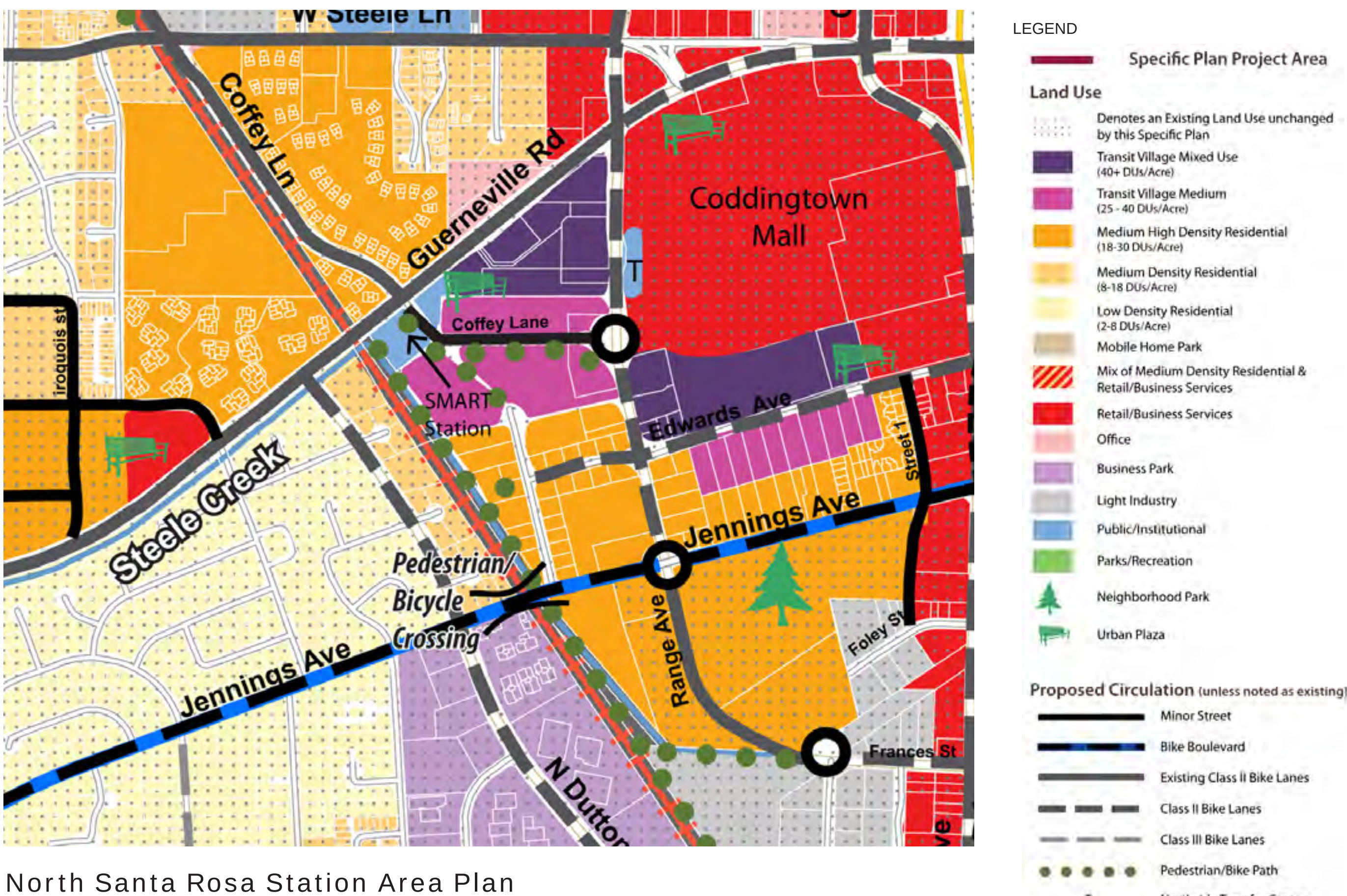
Zoning

In August 2004, the City adopted its current zoning code. The zoning code provides the general requirements for all development and new land uses and mandates that all proposed projects be consistent with the City's Design Guidelines.

The lands to the southwest of the Jennings Avenue Project area are zoned as Business Park-Station Area (BP-SA), and to the northwest the zoning is Multi-Family Residential-Station Area (R-3-18-SA). To the east the zoning is Multi-Family Residential-Station Area (R-3-30-SA). (Santa Rosa 2013)



General Plan



North Santa Rosa Station Area Plan

Source: North Santa Rosa Station Area Specific Plan, September 2012 General Plan Land se Diagram, April 2014

City of Santa Rosa
Jennings Avenue Pedestrian and Bicycle Rail Crossing EIR

Job Number 8410868
Revision A
Date Oct 2014

Jennings Project Area Land Use Designations

Figure 3.9-1

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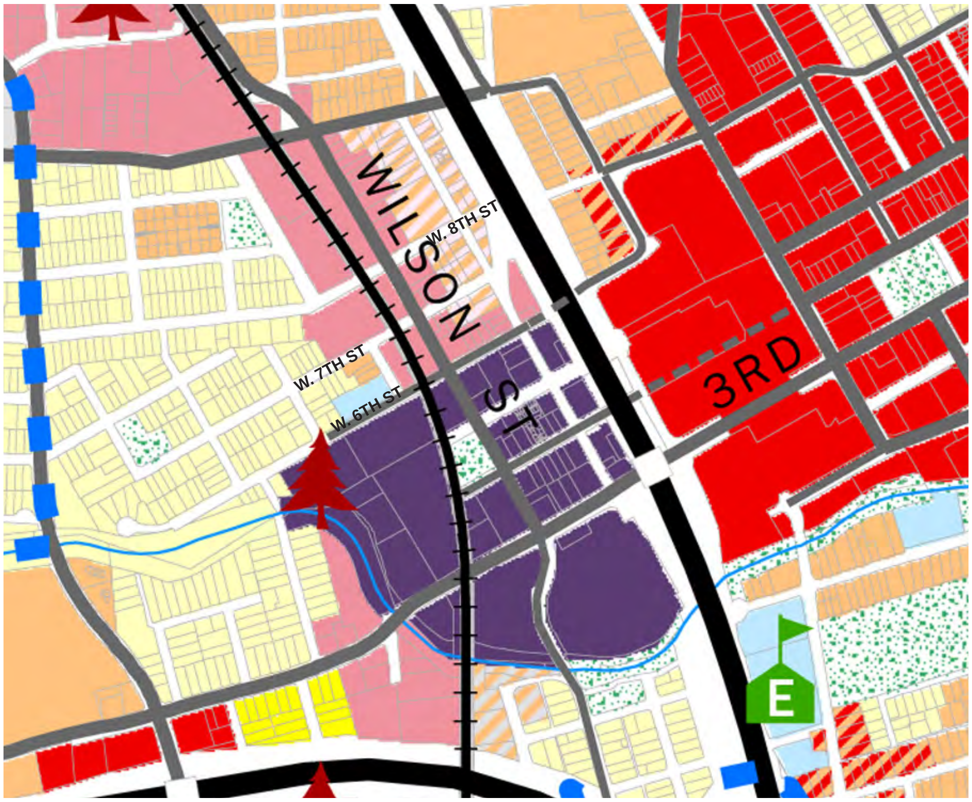
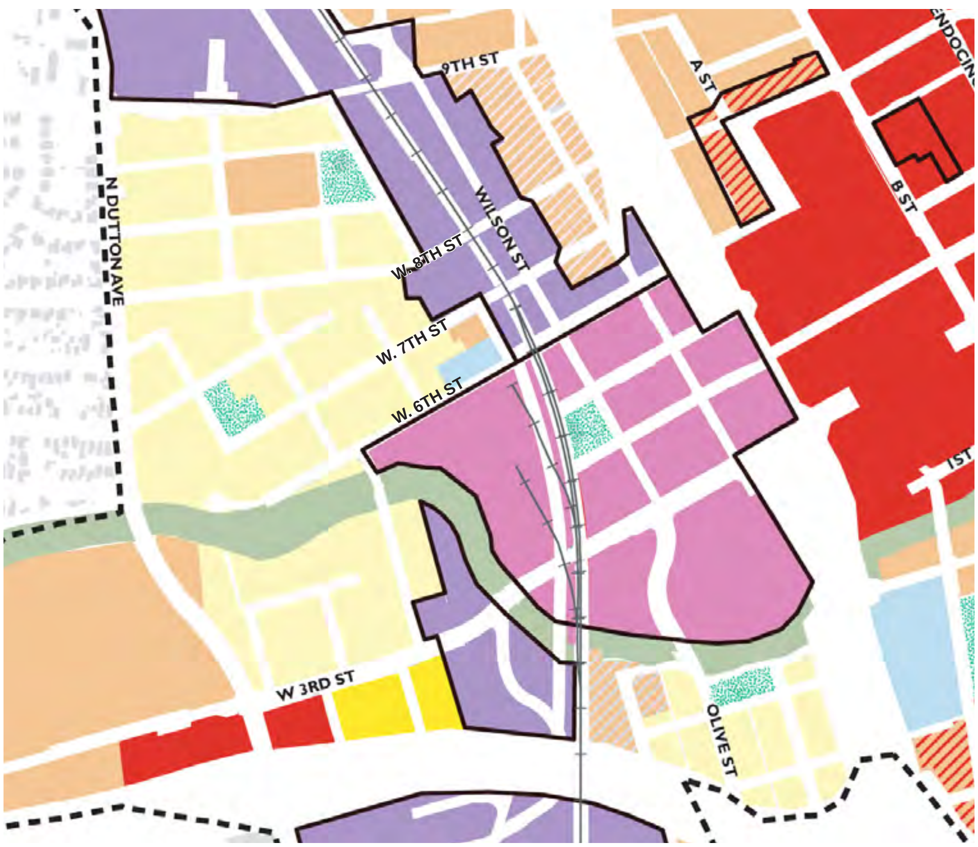


LEGEND

Land Use

- Country Residential (0.05-0.2 units per acre)
- Very Low Densitiy Residential (0.2-2.0 units per acre)
- Low Density/Open Space (2.0-8.0 units per acre)
- Low Density Residential (2.0-8.0 units per acre)
- Medium Low Density Residential (8.0-13.0 units per acre)
- Medium Density Residential (8.0-18.0 units per acre)
- Medium High Density Residential (18.0-30.0 units per acre)
- Transit Village Medium (25.0-40.0 units per acre)
- Mobile Homes (4.0-18.0 units per acre)
- Transit Village Mixed Use
- Retail & Business Services
- Office
- Business Park
- Light Industry
- General Industry
- Public/Institutional
- Parks and Recreation
- Open Space
- Agriculture
- Parcel Lines
- Creeks

General Plan



LEGEND

- Specific Plan Area
- Areas of Change
- Low Density Residential
- Medium Low Density Residential
- Medium Density Residential
- Transit Village Medium
- Transit Village Mixed Use
- Retail & Business Services
- Retail/Medium Residential Mixed Use
- Office
- Office/Med Residential
- Lt Ind/Med Residential Mixed Use
- Public/Institutional
- Parks and Recreation
- Creek

Downtown Station Area Plan

Source: Downtown Station Area Specific Plan,October 2007
General Plan Land se Diagram, April 2014

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City of Santa Rosa
Jennings Avenue Pedestrian and Bicycle Rail Crossing EIR

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Potential Crossing Closure Project Area - Land Use Designations

Figure 3.9-2

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The lands to the west of the rail corridor at W. Sixth Street, W. Seventh Street, and W. Eighth Street are zoned as Transit Village-Residential-Historic-Station Area (TV-R-H-SA), and to the east, it is Transit Village-Residential-Station Area (TV-R-SA). South of W. Sixth Street, the zoning designation is Transit Village-Mixed Use-Historic-Station Area (TV-M-H-SA). (Santa Rosa 2013)

3.9.3 Regulatory Framework

Federal

There are no federal land use plans, policies or regulations pertaining to the Project.

State

There are no State land use plans, policies or regulations pertaining to the Project.

Regional and Local

Santa Rosa 2035 General Plan

The General Plan, adopted in 2009, outlines policies, standards, and programs that together provide a comprehensive, long-term plan for physical development within the City. Individual development projects proposed within the City must demonstrate general consistency with the goals and policies outlined within the General Plan, which articulates and implements the City's long-term vision as it pertains to housing, transportation, historic preservation, open space and other areas.

The following are the goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.

LUL-A-1 As part of plan implementation – including development review, capital improvements programming, and preparation of detailed area plans – foster close land use/transportation relationships to promote use of alternative transportation modes and discourage travel by automobile.

LUL-E Promote livable neighborhoods by requiring compliance with green building programs to ensure that new construction meets high standards of energy efficiency and sustainable material use. Ensure that everyday shopping, park and recreation facilities, and schools are within easy walking distance of most residents.

LUL-E-2 As part of planning and development review activities, ensure that projects, subdivisions, and neighborhoods are designed to foster livability.

Utilize the City's Design Guidelines as a reference when evaluating the following neighborhood components:

- *Streets*. Street design, traffic calming, and landscaping can make great contributions to the creation of successful neighborhoods. Neighborhood streets should be quiet, safe, and accommodate pedestrians and bicyclists.
- *Connections*. Neighborhoods should be well connected to local shops and services, public plazas and gathering places, park lands, downtown, schools, and recreation by adequate and safe streets, bike lanes, public pathways, trails, general infrastructure (e.g., sidewalks and crosswalks), and transit.

- *Public Spaces*. Downtown serves as the most important public place in the city. Developments in the area should further this by incorporating natural features and bicycle/pedestrian connections, to encourage use and social interaction.
- *Neighborhood Character*. Each neighborhood should maintain a distinct identity, such as the historic preservation districts featuring Victorian cottages and California bungalows.
- *Diversity and Choice*. Neighborhoods should provide choices for residents with different values. Different housing types and locations within the city accommodate a diverse range of needs.

North Santa Rosa Station Area Specific Plan

The City of Santa Rosa adopted the North Santa Rosa Station Area Specific Plan in 2012 to guide development to support future rail transit. The Specific Plan encompasses a 987-acre area, and aims to increase the number of residents and employees within walking distance of the proposed SMART station at Guerneville Road by improving pedestrian, bicycle, auto, and transit connections, increasing residential density, promoting economic development, and enhancing aesthetics and quality of life (Santa Rosa 2012).

The plan provides guidance for private development and public investment over a 20- to 25- year period. The proposed bicycle and pedestrian rail crossing at Jennings Avenue would be located near the center of the Specific Plan, approximately one-quarter mile from the proposed SMART station at Guerneville Road

The following are land use goals and policies from the *North Santa Rosa Station Area Specific Plan* that are applicable to the Project.

LU-3.1 Expand the system of parks, trails, and recreational opportunities.

LU-4.3 Encourage green site design by utilizing native and/or drought-tolerant trees and plants where possible, incorporating permeable paving and designing resource-efficient landscapes and gardens.

Downtown Station Area Specific Plan

The City of Santa Rosa adopted the Downtown Station Area Specific Plan in 2007 to address the development and redevelopment of the 647-acre area in and around the downtown area of Santa Rosa, centered on the proposed SMART rail station. A primary objective of the Downtown Station Specific Plan is to increase the number of residents and employees within walking distance of the proposed SMART Railroad Square station through the intensification of land uses. The plan promotes a mixture of residential, retail, office, and open space land uses in a pedestrian friendly urban environment. The potential crossing closure at W. Sixth Street is located on the northern boundary of the Railroad Square Sub-Area and the Railroad Corridor Sub-Area. The W. Seventh Street and W. Eighth Street crossing closures are located in the Railroad Corridor Sub-Area. The Specific Plan envisions the Sub-Areas as having neighborhood-serving retail and activity-generating uses at the street level. W. Sixth Street in the Project area is designated as a Shop Front Street Type, with retail uses on the ground floor and commercial and residential uses above.

Several proposed and ongoing development projects informed the development of the Specific Plan. Two of these projects are in the vicinity of the Preferred Project, the SMART Joint Development Project, and the DeTurk Winery Village Project. The SMART Joint Development Project is located immediately to the south of the potential W. Sixth Street crossing closure on the

west side of the railroad corridor. According to the Specific Plan, this development would include residential condominiums, a food and wine center, retail uses, parking, and open space. The Specific Plan also proposes a new “SMART Street” running north-south and parallel along the west side of the rail corridor between W. Sixth Street and W. Third Street, and an “Alternative SMART Street” to the west of the SMART Joint Development Project, immediately to the east of the Sixth Street Playhouse. (Santa Rosa 2007)

According to the Specific Plan, the DeTurk Winery Village Project consists of the reuse and conversion of the historic DeTurk Winery buildings on Donahue Street into 80 residential condominiums. This proposed development is immediately to the north of the potential crossing closure at W. Eighth Street, to the west of the rail corridor. (Santa Rosa 2007)

The following are the goals and policies from the Downtown Station Area Specific Plan that are applicable to the Project.

SP-LU-1.2 Improve pedestrian, bicycle and bus transit connections from surrounding areas to the Downtown SMART Station site as well as between neighborhoods surrounding the SMART Station site.

SP-LU-1.3 Create pedestrian friendly environments and provide convenient connections to the transit facility for all modes of transportation.

Santa Rosa Bicycle and Pedestrian Master Plan 2010

The City of Santa Rosa adopted the Bicycle and Pedestrian Master Plan in 2010 to evaluate current and long-term development plans specifically for the pedestrian and bicycle modes of transportation, and to provide guidance in building a multi-modal transportation system that is pedestrian and bicycle friendly and encourages residents to use these modes of transportation (Santa Rosa 2010).

There are no goals and policies from the *Santa Rosa Bicycle and Pedestrian Master Plan 2010* that are applicable to the Project’s potential impacts on land use. Please refer to Section 3.12, Transportation, for an evaluation of policies from the *Santa Rosa Bicycle and Pedestrian Master Plan 2010*.

Santa Rosa Zoning Code

The City’s Zoning Code, which incorporates by reference the City’s Zoning Map, implements the General Plan and provides location-specific regulation, such as use restrictions and building height and bulk limitations. Zoning designations in the Project area are discussed in the Setting. Improvements within the City’s right of way are not subject to the City’s Zoning Code.

3.9.4 Evaluation Criteria and Significance Thresholds

Table 3.9-1 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
LU-1: Would the Project physically divide an established community?	A physical barrier to movement dividing an established community that results in a complete physical separation from the rest of the neighborhood.	CEQA Guidelines Appendix G, Checklist Item X (a)
LU-2: Would the Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	Any conflict with a goal, policy, or proposed development envisioned in the General Plan, North Santa Rosa Station Specific Plan, or Downtown Station Area Plan. Any conflict with the zoning ordinance.	CEQA Guidelines Appendix G, Checklist Item X (b) Santa Rosa General Plan 2035 North Santa Rosa Station Specific Plan Downtown Station Area Plan Santa Rosa Zoning Code

Areas of No Project Impact

The Project would not result in impacts to one land use checklist question contained in Appendix G of the current CEQA Guidelines. For the reasons presented below, the following evaluation criterion is not applicable to the Project.

- ***Conflict with any applicable habitat conservation plan or natural community conservation plan****.*

  The Project is not located within the planning area for an adopted habitat conservation plan or a natural community conservation plan (USFWS 2013; CDFW 2013). Therefore, this significance criterion is not applicable to the Project and is not discussed further.

3.9.5 Methodology

The impact analysis for land use and planning focuses on whether implementation of the Project would physically divide an established community or conflict with applicable land use plans, policies, and regulations. With regard to the division of an established community, proposed Project components are evaluated in relation to existing land use connectivity across the railroad corridor at Jennings Avenue and at W. Sixth Street, W. Seventh Street, and W. Eighth Street. This section also evaluates Project components against the regulations and plans described under the Regulatory Framework section.

3.9.6 Impacts and Mitigation Measures

Table 3.9-2 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.	
LU-1: Would the Project physically divide an established community?	LS	LS	LS	LS
LU-2: Would the Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	SU	SU	SU	NI
LU-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to land use?	NI	NI	NI	NI

Notes: NI = No Impact
LS = Less than Significant
SU = Significant and Unavoidable

Impact: **LU-1: Would the Project physically divide an established community?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Construction and Operation

The SMART rail corridor, formerly the Northwest Pacific Railroad corridor, runs north-south through the western portion of the City. The railroad corridor is a physical barrier that pre-dates much of the development in the City, including the residential neighborhood in the Jennings Avenue Project area, and the West End and Railroad Square neighborhoods in the W. Sixth Street, W. Seventh Street, and W. Eighth Street Project areas. The rail corridor physically divides land uses to the east and west of the tracks, although crossings (official and unofficial) have been established to allow vehicular, bicycle and/or pedestrian movement across the rail corridor.

The Preferred Project would construct an at-grade pedestrian and bicycle rail crossing across the rail corridor at Jennings Avenue. Pedestrians and bicyclists currently cross the corridor at the same location, even though it is not officially permitted by the CPUC. The unofficial crossing is used by recreational bicyclists and pedestrians as well as children traveling to and from school (Helen M. Lehman Elementary School is located approximately half a mile west of the railroad corridor).

The construction of an official at-grade rail crossing would not physically divide an established community. Instead, it would provide an improved connection

across the railroad corridor for recreationists, commuters, and school children. The at-grade rail crossing would have a beneficial impact regarding physical division of an established community. No impact would occur.

Closure of an existing rail crossing at W. Sixth Street, W. Seventh Street, or W. Eighth Street would include removal of the crossing surfaces and installation of a vehicle guard rail and fencing to prevent pedestrian, bicycle, and vehicular traffic across the rail corridor. A crossing closure at W. Sixth, W. Seventh, or W. Eighth Street would eliminate through traffic for all travel modes at one of these locations. However, a crossing closure would not result in the physical division of either the West End or Railroad Square communities, because land use connectivity within and across these communities would remain at other crossings for all travel modes. For example, north-south oriented streets such as Davis Street, Wilson Street, Adams Street, and Donahue Street would remain open. Because only one crossing closure would be closed, the other two remaining crossings would continue to provide connectivity between land uses to the east and west of the railroad corridor. If W. Sixth Street is closed, the remaining downtown cross-highway connections at Fifth Street, Fourth Street, and W. Third Street to the south, and W. Ninth Street to the north, would continue to allow movement between land uses across Highway 101. Therefore, the impact of a rail crossing closure at W. Sixth Street, W. Seventh Street, or W. Eighth Street related to physical division of a community would be less than significant.

Mitigation: No mitigation is needed.

Analysis: *Rail Overcrossing Alternative (Less than Significant)*

Construction and Operation

The Rail Overcrossing Alternative would construct a grade-separated ADA-compliant elevated crossing over the SMART rail corridor for pedestrians and bicyclists. The overcrossing would not physically divide established communities to the east or west of the Project area. Instead, it would provide an official grade-separated rail crossing for pedestrians and bicyclists at the same location that is currently used as an unofficial crossing.

To accommodate the space needed for the overcrossing, Jennings Avenue on the west side of the rail corridor would be narrowed, resulting in two vehicle travel lanes and the removal of parking on the north and south side of the street between the railroad corridor and N. Dutton Avenue. A driveway extension would be provided under the overcrossing for access to the offices located on the south side of Jennings Avenue. The overcrossing would result in a new visual obstruction between the north and south sides of the street, but would not create a physical barrier to movement. Access to the office park would be maintained with construction of a driveway extension. Vehicular traffic would still be allowed on Jennings Avenue, providing circulation in and out of the office park and apartment complex on the west of the rail corridor. Therefore, the Rail Overcrossing Alternative would have a less-than-significant impact regarding physical division of an established community.

Mitigation: No mitigation is needed.

Impact: **LU-2: Would the Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Jennings Avenue Project Area

An at-grade rail crossing at Jennings Avenue would not conflict with General Plan policies adopted for the purpose of avoiding or mitigating environmental effects. It would promote pedestrian and bicycle travel modes and livable neighborhoods by connecting residents to shopping, parks, schools, and recreation facilities on either side of the rail corridor. It would improve pedestrian and bicycle connections to the proposed North Santa Rosa SMART station at Guerneville Road, enable Jennings Avenue to become a bicycle boulevard as approved in the General Plan, and would integrate with the proposed SMART pathway along the rail corridor.

An at-grade rail crossing at Jennings Avenue would not conflict with the goals and policies of the North Santa Rosa Station Area Specific Plan. The Project would implement the Plan's primary objective, which is to "support future rail transit by increasing the number of residents and employees within walking distance of the SMART station by improving pedestrian, bicycle, auto, and transit connections, increasing residential density, promoting economic development, and enhancing aesthetics and quality of life" (Santa Rosa 2012, p. 1-5). The rail crossing would provide recreational opportunities by providing a connection for pedestrians and bicyclists across the railroad corridor, as well as integration with the future regional SMART pathway.

The at-grade rail crossing at Jennings Avenue is not within the Downtown Station Area Specific Plan area.

The at-grade rail crossing would not conflict with adopted policies relative to land use, and therefore no impact would occur.

W. Sixth Street, W. Seventh Street, and W. Eighth Street Project Areas

A rail crossing closure at W. Sixth, W. Seventh, or W. Eighth Street would conflict with Downtown Station Area Specific Plan policies adopted for the purpose of avoiding or mitigating environmental effects related to connectivity. Specifically, closure of a rail crossing at any of the three locations would conflict with Downtown Station Area Specific Plan policies SP-LU-1.2 and SP-LU-1.3 regarding improving pedestrian, bicycle and bus transit connections between surrounding areas and the Downtown SMART station.

A primary purpose of the Downtown Station Area Plan is to increase the number of residents and employees within walking distance of the proposed SMART Railroad Square station. The closure of any of the three rail crossings would not improve connections to the Downtown SMART station, the future SMART pathway in this area, or the general downtown area, although those traveling to and from nearby land uses across the rail corridor could utilize other nearby connectors within walking, biking and driving distance to reach their destinations,

and W. Ninth Street, Fifth Street, Fourth Street, and W. Third Street could be used to cross under the freeway.

The Downtown Station Area Plan assigns land use designations at certain areas near the crossing closure sites at greater intensities. For example, the SMART Joint Development Project listed in the Specific Plan is adjacent to the Preferred Project's potential rail crossing closure on W. Sixth Street and is designated Transit Village Mixed use. A new street is proposed within the SMART Joint Development Project property that would exit onto W. Sixth Street just west of the rail corridor. A closure at W. Sixth Street would alter the circulation pattern established by the Specific Plan, and although traffic would be able to continue down Adams Street to W. Seventh Street or down W. Sixth Street to Pierson Street and then to W. Third Street, the overall connectivity within the area to and from the Downtown SMART station would not improve.

As another example, the DeTurk Winery Village Project listed in the Specific Plan is located adjacent to the Preferred Project's potential rail crossing closure on W. Eighth Street, with a land use designation of Transit Village Medium. A closure at W. Eighth Street would alter the circulation pattern established by the Specific Plan, and pedestrians, bicyclists, and vehicles would need to utilize Donahue Street to W. Ninth Street to Wilson Street, or travel west along W. Eighth Street, then south down Madison Street to W. Sixth Street or W. Seventh Street to connect to the future SMART pathway in this area or the Downtown SMART station.

These conflicts with Downtown Station Area Specific Plan policies would be a significant impact.

Mitigation: No mitigation is available.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Significant and Unavoidable)*

No feasible mitigation is available to reduce the conflict with policies in the Downtown Station Area Specific Plan related to promoting improved connectivity to alternative transportation modes, including improved pedestrian, bicycle, and bus transit connections from surrounding areas to the Downtown SMART station. Therefore, the impact would be significant and unavoidable.

Analysis: *Rail Overcrossing Alternative (No Impact)*

Construction and Operation

Similar to the Preferred Project, the overcrossing would promote General Plan policies adopted for the purpose of avoiding or mitigating environmental effects relative to livable neighborhoods by connecting residents to shopping, parks, schools, and recreation facilities on either side of the rail corridor. It would improve pedestrian and bicycle connections to the proposed North Santa Rosa SMART station at Guerneville Road and would integrate with the proposed SMART pathway along the rail corridor.

The overcrossing would not conflict with the goals and policies of the North Santa Rosa Station Area Specific Plan. The overcrossing would provide recreational opportunities for pedestrians and bicyclists and integrate with the future regional

SMART pathway and promote connections between residential, commercial, and school uses on both sides of the rail corridor.

The Downtown Station Area Specific Plan is not applicable to the Jennings Project area, because it is outside of the specific plan planning area.

The Rail Overcrossing Alternative would not conflict with General Plan or North Santa Rosa Station Area Specific Plan goals or policies relative to land use, and therefore no impact would occur.

Mitigation: No mitigation is needed.

Impact: LU-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to land use?

Analysis: Preferred Project – At-grade Rail Crossing (No Impact)

Rail Overcrossing Alternative (No Impact)

None of the cumulative projects (identified in Section 3.0, Environmental Setting, Impacts and Mitigation Measures, Table 3-1 [Projects Considered for Cumulative Impacts]) include closure of streets or other similar attributes that, together with the Project, would physically divide a community. Therefore, no cumulative impact would occur relative to this significance criterion.

Also, none of the cumulative projects identified near the W. Sixth, W. Seventh, or W. Eighth Street Project area would exacerbate impacts relative to reduction of connectivity or reduced cohesiveness of land use connections in support of SMART ridership and Railroad Square businesses. Therefore, no cumulative impact would occur relative to this significance criterion.

3.9.7 References

California Department of Fish and Wildlife (CDFW). 2013. *Summary of Natural Community Conservation Plans*. April.

Office of Planning and Research (OPR). 1990. *Guide to Planning in California*. August.

Santa Rosa, City of (Santa Rosa). 2007. *Downtown Station Area Specific Plan*.

Santa Rosa. 2009. *City of Santa Rosa General Plan 2035*.

Santa Rosa. 2010. *Bicycle and Pedestrian Master Plan 2010*.

Santa Rosa. 2012. *North Santa Rosa Station Area Specific Plan*.

Santa Rosa. 2013. *Zoning Map* of the City of Santa Rosa. August.

Santa Rosa. 2014. *General Plan Land Use Diagram*. April 15.

U.S. Department of Fish and Wildlife (USFWS). 2013. *Habitat Conservation Plans*. Website Accessed November 27, 2013 at: http://ecos.fws.gov/conserv_plans/PlanReport?region=8&type=HCP&rtype=2&hcpUser=&view=report

3.10 Noise

This section evaluates the potential impacts related to noise and vibration during construction and operation of the Project. The impacts and mitigation measures section establishes the thresholds of significance, evaluates potential noise impacts, evaluates potential vibration impacts, and identifies the significance of impacts. Where appropriate, mitigation is presented to reduce impacts to less-than-significant levels.

3.10.1 Impacts Evaluated in Other Sections

All noise related topics are evaluated in this section.

3.10.2 Setting

Fundamentals of Acoustics

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its pitch or its loudness. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 3.10-1 (Definitions of Acoustical Terms).

There are several methods of characterizing sound. The most common method in California is the A-weighted sound level or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The Community Noise Equivalent Level (CNEL) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 p.m. - 10:00 p.m.) and a 10 dB addition to nocturnal (10:00 p.m. - 7:00 a.m.) noise levels. The Day/Night Average Sound Level (Ldn) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Table 3.10-1 Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this section are A-weighted, unless indicated otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

Fundamentals of Groundborne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several methods are typically used to quantify the amplitude of vibration including Peak Particle Velocity (PPV) and Root Mean Square (RMS) velocity. PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. RMS velocity is defined as the average of the squared amplitude of the signal, usually measured in decibels referenced to 1 micro-in/sec and reported in vibration decibels (VdB). PPV and VdB vibration velocity amplitudes are used in this analysis to evaluate the effect on buildings and human response to vibration.

Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. This rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows. In urban environments sources of ground-borne vibration include construction activities, light and heavy rail transit, and heavy trucks and buses.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related ground-borne vibration levels. Because of the impulsive nature of such activities, the use of the PPV descriptor has been routinely used to measure and assess groundborne vibration and almost exclusively to assess the potential of vibration to induce structural damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life are evaluated against different vibration limits. Studies have shown that the threshold of perception for average persons is in the range of 0.008 to 0.012 in/sec PPV. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as minor cracking of building elements, or may threaten the integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to the building. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

Project Areas

Project components would be located in two areas of Santa Rosa. The pedestrian and bicycle rail crossing would be located where Jennings Avenue approaches the Sonoma-Marin Area Rail Transit District (SMART) rail corridor. The closest cross streets are Herbert Street to the east and North Dutton Avenue to the west. The rail crossing would be located within the planning area of the North Santa Rosa Station Area Specific Plan. Nearby sensitive receptors include surrounding residences on either side of the rail corridor, and a child care center, Little People's Playhouse, located near the construction area on the east side of the rail corridor.

The Preferred Project may also need to include the closure of an existing at-grade rail crossing at either W. Sixth, W. Seventh, or W. Eighth Street, located just west of Wilson Street, approximately one mile southeast of the crossing at Jennings Avenue. The potential closure would be located within the planning area of the Downtown Station Area Specific Plan.

Existing Noise Environment

A noise monitoring survey was performed between Wednesday, December 18, 2013 and Monday, December 23, 2013 in order to document ambient noise conditions in the vicinity of the Jennings Avenue crossing and potential crossing closure sites. The noise monitoring survey included three unattended long-term noise measurements (LT) and five attended short-term noise measurements (ST). The location of the noise measurements is shown on Figure 3.10-1 (Noise Measurement Locations), and the monitoring data are available in Appendix F (Noise Measurements).

Long-term noise measurement LT-1 quantified existing noise levels along the trail located east of the SMART right-of-way approximately 570 feet south of the Guerneville Road centerline. Ambient noise levels measured at this location were primarily the result of distant traffic along Guerneville Road. Hourly average noise levels typically ranged from about 45 to 54 dBA L_{eq} during daytime hours and from about 38 to 50 dBA L_{eq} at night. Maximum instantaneous noise levels during the daytime were typically less than 70 dBA L_{max} during the daytime and less than 65 dBA L_{max} at night. A single roundtrip train event was documented on Thursday, December 19, 2013. The first train passby occurred during the 9:00 a.m. hour and the second train passby occurred during the noon hour. Maximum instantaneous noise levels during train passby ranged from 81 to 85 dBA L_{max}. The calculated day-night average noise level at LT-1 ranged from 52 to 53 dBA DNL.

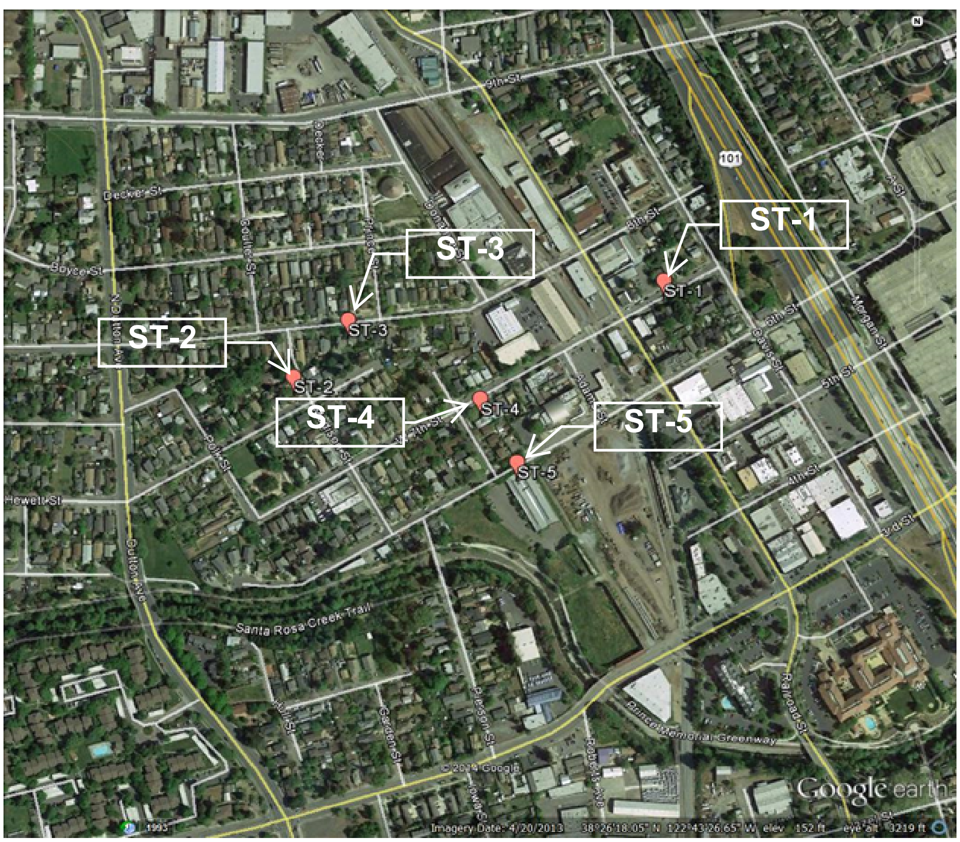
Noise measurement site LT-2 was located southeast of Jennings Avenue along the Sonoma County Water Agency maintenance road east of the SMART right-of-way in order to document ambient noise levels at residential receptors located nearest the crossing. Ambient noise levels measured at this location were primarily the result of local traffic and other residential noise sources. Hourly average noise levels typically ranged from about 48 to 58 dBA L_{eq} during daytime hours and from about 42 to 54 dBA L_{eq} at night. Maximum instantaneous noise levels during the daytime were typically less than 75 dBA L_{max} during the daytime and less than 65 dBA L_{max} at night. Maximum instantaneous noise attributable to the train passbys reached 94 dBA L_{max}. The calculated day-night average noise level at LT-2 ranged from 55 to 57 dBA DNL.

Noise measurements made at LT-3 quantified existing noise levels at the easternmost boundary of the Parkpoint Health Club adjacent to the SMART corridor. The noise environment at LT-3 results from local traffic and nearby commercial and industrial land uses. Hourly average noise levels typically ranged from about 49 to 63 dBA L_{eq} during daytime hours and from about 47 to 59 dBA L_{eq} at night. Maximum instantaneous noise levels during the daytime were typically less than 75 dBA L_{max} during the daytime and less than 65 dBA L_{max} at night. Maximum instantaneous noise attributable to the train passbys reached 92 dBA L_{max}. The calculated day-night average noise level at LT-3 ranged from 60 to 61 dBA DNL.

A series of short-term noise measurements were made on Monday, December 23, 2013 at various locations in the vicinity of the potential crossing closure sites in order to document ambient noise levels near residential receptors.

Short-term noise measurement site ST-1 was located at the front of 119 Seventh Street. The average noise level measured during the early afternoon was 55 dBA L_{eq}. Noise measurement ST-2 was made in front of the residence located at 705 Madison Street. The average noise level during the midday was 54 dBA L_{eq}. Short-term noise measurement site ST-3 was located at the front of 142 W. Eighth Street. Very little traffic was noted during the ST-3 measurement yielding an average noise level of 49 dBA L_{eq}. Site ST-4 was located at the front of 50 W. Seventh Street. Similar to the measurement made at ST-3, very little traffic was noted and the average noise level was 53 dBA L_{eq}. The final short-term noise measurement was made at the front of 113 W. Sixth Street. The average noise level at ST-5 was 55 dBA L_{eq}.

Location of long-term noise measurements taken near the Jennings Avenue Project area.



Location of short-term noise measurements taken near the W. Sixth Street, W. Seventh Street, and W. Eighth Street Project areas.

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The short-term noise measurements confirmed that the noise environment could be characterized as “quiet suburban” at the residential areas near the crossing closures.

Existing Train Trips

According to SMART, under existing conditions there were approximately six “equipment on tracks” per month for SMART construction and maintenance as of November 2013. There were also seven one-way freight train trips in the three-month period between September and December 2013. All freight train trips occurred between 7:00 a.m. and 10:00 p.m.[1]. Based on the existing level of activity reported by SMART, this analysis assumes that baseline train trips would include up to one freight train or SMART train roundtrip during the daytime on any given day. (SMART 2014)

3.10.3 Regulatory Framework

Federal

The Federal Railroad Administration’s (FRA) Train Horn Rule (49 CFR Part 222) provides a process to determine what can be done to offset the lack of a train horn, to calculate the risk reduction associated with potential improvements, and to officially establish a Quiet Zone. In general, a Quiet Zone may only be established after implementing safety improvements that provide the same level of risk reduction as would otherwise be provided by the train horn. The process for application for a Quiet Zone requires a joint agreement by the rail operators and the jurisdiction where the rail crossing is located. The application for a Quiet Zone is submitted after the rail crossing has been constructed and, in general, should allow time for effected residents to become accustomed to the noise of train horns. (CPUC 2014a, CPUC 2014b)

Noise impact criteria have been developed by the U.S. Department of Transportation, Federal Transit Administration (FTA), for use in evaluating noise and vibration related impacts due to federally-funded transit projects. The City has applied for federal grant funding for the Project, and if such funding is received, will prepare documentation under the National Environmental Policy Act (NEPA). The NEPA documentation would include an evaluation of noise impacts according to the federal noise criteria. However, relative to this CEQA document, the federal noise criteria are not applicable to the Project.

State

The California Public Utilities Commission’s (CPUC) Rail Crossings Engineering Branch reviews applications for a Quiet Zone. If additional safety equipment or improvements are required in order to implement a Quiet Zone, a jurisdiction must apply for approval of General Order 88-B, Modify an Existing Rail Crossing. (CPUC 2014a, CPUC 2014b)

No State standards related to noise and vibration would be applicable to the Project. However, the California Department of Transportation (Caltrans) has published guidelines for evaluating potential vibration impacts from construction projects. Caltrans’ Transportation and Construction Vibration Guidance Manual indicates that vibration in excess of 0.3 inches per second (in/sec) PPV could cause cosmetic damage to structures, and 0.1 in/sec PPV could cause residential annoyance during sleep periods.

[1] In the calculation of the Day/Night Noise Level (DNL), the daytime period is defined as the time period between 7:00 a.m. and 10:00 p.m., and the nighttime period is defined as the time period between 10:00 p.m. and 7:00 a.m.

Regional and Local

Santa Rosa Municipal Code, Chapter 17-16 Noise

The noise ordinance regulates stationary sources of noise, such as mechanical equipment and amplified sounds. The City of Santa Rosa Municipal Code, Chapter 17-16 Noise, Section 17-16.120 states that "it is unlawful for any person to operate any machinery, equipment, pump, fan, air-conditioning apparatus or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any property to exceed the ambient base noise level by more than five decibels." The City of Santa Rosa Municipal Code does not have any regulations regarding construction noise.

Santa Rosa Municipal Code, Chapter 20-30 Standards for All Development and Land Uses

Section 20-30.090 of the Code establishes performance standards for all development and land uses. "No ground vibration shall be generated that is perceptible without instruments by a reasonable person at the property lines of the site, except for vibrations from temporary construction or demolition activities, and motor vehicle operations."

City of Santa Rosa General Plan Goals and Policies

The following are the goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.

NS-B Maintain an acceptable community noise level to protect the health and comfort of people living, working and/or visiting in Santa Rosa, while maintaining a visually appealing community.

NS-B-3 Prevent new stationary and transportation noise sources from creating a nuisance in existing developed areas. Use a comprehensive program of noise prevention through planning and mitigation, and consider noise impacts as a crucial factor in Project approval.

NS-B-4 Require new Projects in the following categories to submit an acoustical study, prepared by a qualified acoustical consultant:

- All new Projects proposed for areas with existing noise above 60dBA DNL. Mitigation shall be sufficient to reduce noise levels below 45 dBA DNL in habitable rooms and 60 dBA DNL in private and shared recreational facilities. Additions to existing housing units are exempt.
- All new Projects that could generate noise whose impacts on other existing uses would be greater than those normally acceptable (as specified in the Land Use Compatibility Standards).

NS-B-5 Pursue measures to reduce noise impacts primarily through site planning. Engineering solutions for noise mitigation, such as sound walls, are the least desirable alternative.

NS-B-6 Do not permit existing uses to generate new noises exceeding normally acceptable levels unless:

- Those noises are mitigated to acceptable levels; or
- The activities are specifically exempted by the City Council on the basis of community health, safety, and welfare.

NS-B-7 Allow reasonable latitude for noise generated by uses that are essential to community health, safety, and welfare. These include emergency medical helicopter and vehicle operations, and emergency vehicle sirens.

NS-B-14 Discourage new Projects that have potential to create ambient noise levels more than 5 dBA DNL above existing background, within 250 feet of sensitive receptors.

North Santa Rosa Station Area Specific Plan Goals and Policies

The *North Santa Rosa Station Area Specific Plan* does not include goals and policies that address noise or vibration that are applicable to the Project.

Downtown Santa Rosa Station Area Specific Plan Goals and Policies

The *Downtown Santa Rosa Station Area Specific Plan* does not include goals and policies that address noise or vibration that are applicable to the Project.

3.10.4 Evaluation Criteria and Significance Thresholds

Table 3.10-2 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
NO-1: Would the Project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	60 dBA DNL	City of Santa Rosa General Plan Policy NS-B-4
NO-2: Would the Project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	0.3 in/sec PPV – cosmetic damage to structures 0.1 in/sec PPV – residential annoyance during typical periods of rest (early morning, evening, and nighttime)	Caltrans Transportation and Construction Vibration Guidance Manual
NO-3: Would the Project result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	5 dBA DNL above existing background	City of Santa Rosa General Plan Policy NS-B-14
NO-4: Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	Daytime - 80 dBA L_{eq} for a period greater than one month Nighttime - 50 dBA L_{eq} for a period greater than one day	Standard industry practice

Areas of No Project Impact

As explained below, the Project would not result in impacts related to two of the noise criteria identified in Appendix G of the current CEQA Guidelines. The following significance criteria are not discussed further in the impact analysis, for the following reasons:

- ***Located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and expose people residing or working in the Project area to excessive noise levels.***

  The Project is not located within an airport land use plan or within two miles of a public airport. Therefore this significance criterion is not applicable to the Project and is not discussed further.

- ***Located within the vicinity of a private airstrip, and expose people residing or working in the Project area to excessive noise levels.***

  The Project is not located within the vicinity of a private airstrip. Therefore this significance criterion is not applicable to the Project and is not discussed further.

3.10.5 Methodology

The noise and vibration impact assessment evaluates noise and vibration impacts associated with construction and operation of the Project. The assessment of potential noise impacts was conducted using the anticipated noise that would be produced during construction and operation of the Project as compared to noise level thresholds established by the regulatory criteria. The assessment of vibration impacts was conducted using information on anticipated vibration levels generated during the construction of the Project.

For construction noise, the potential for impacts was assessed by considering several factors, including the proximity of Project-related noise sources to noise-sensitive land uses (i.e., sensitive receptors), typical noise levels associated with construction equipment, the potential for construction noise levels to interfere with daytime and nighttime activities, and the duration that sensitive receptors would be affected. For operational noise, the potential for impacts was assessed by evaluating the noise generation potential noise sources, proximity of sensitive receptors, and the potential for operational noise to remain within the established local limits at the nearest receptors.

The Caltrans guidelines for vibration are the basis for the significance criteria for annoyance and potential building damage. Caltrans recommends a vibration limit of 0.5 in/sec, PPV for buildings structurally sound and designed to modern engineering standards, 0.3 in/sec, PPV for buildings that are found to be structurally sound but where structural damage is a major concern, and a conservative limit of 0.08 in/sec, PPV for ancient buildings or buildings that are documented to be structurally weakened. This analysis assumes that construction areas would not be in the vicinity of fragile structures, but older structures exist. Based on Caltrans guidance, this analysis establishes 0.3 in/sec PPV as the significance threshold for construction vibration to avoid damage to buildings from vibration sources. Also based on Caltrans guidance, this analysis establishes 0.1 in/sec PPV as the significance threshold for annoyance (the level at which vibration would be strongly perceptible).

Traffic volume data contained in the traffic impact analysis completed for the Preferred Project was reviewed to calculate potential Project-related and cumulative traffic noise level increases along roadways in the vicinity of the W. Sixth, W. Seventh, or the W. Eighth Street crossings. Roadway link volumes were calculated based on the turning movement data and compared to existing conditions to calculate the anticipated noise level increase under each crossing closure scenario.

3.10.6 Impacts and Mitigation Measures

Table 3.10-3 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing w/ Rail Crossing Closure at W. Sixth St.	Preferred Project: At-grade Rail Crossing w/ Rail Crossing Closure at W. Seventh St.	Preferred Project: At-grade Rail Crossing w/ Rail Crossing Closure at W. Eighth St.	Rail Overcrossing Alternative
NO-1: Would the Project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	SUM	SUM	SUM	LS
NO-2: Would the Project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	LSM	LSM	LSM	LS
NO-3: Would the Project result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	SUM	SUM	SUM	LS
NO-4: Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	LSM	LSM	LSM	LSM
NO-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to noise?	SUM	SUM	SUM	LS

Notes: LS = Less than Significant
LSM = Less than Significant with Mitigation
SUM = Significant and Unavoidable with Mitigation

Impact: **NO-1: Would the Project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Construction

Neither the City of Santa Rosa General Plan, nor the City of Santa Rosa Municipal Code, contains policies or regulations that would apply to Project-

related construction noise. Temporary noise increases due to Preferred Project construction activities are evaluated under Impact NO-4.

Operation

CPUC Section 7604 requires that trains sound warning whistles (i.e., train horns) at all pedestrian at-grade crossings. In general, the train engineer must sound the horn at a distance of at least 1,320 feet (one-quarter mile) from the crossing and continue sounding the horn until the locomotive has passed through the area. The maximum instantaneous noise level resulting from train horns would be 110 dBA L_{max} at a distance of 50 feet. Therefore, operation of a new at-grade crossing at Jennings Avenue would result in the sounding of additional train horns to the north and south of Jennings Avenue as well as in the immediate vicinity of the crossing. Northbound trains would sound horns beginning approximately 0.25 mile south of Jennings Avenue, and southbound trains would sound horns beginning at the Guerneville Road SMART Station.

As documented in the SMART 2005 DEIR, the sounding of train horns would substantially increase ambient noise levels near at-grade crossings. The Preferred Project would add an additional at-grade crossing, thereby exposing additional receptors near the at-grade crossing to train horn noise.

Because regular SMART passenger service has not yet begun, Project impacts relative to train horn noise are analyzed based on existing conditions at the time of the NOP in November 2013, that is, using the existing level of train trips. As described in the Setting, based on the existing level of activity reported by SMART, this analysis assumes that baseline train trips would include up to one freight train or SMART train roundtrip during the daytime on any given day (SMART 2014). Impacts relative to train horn noise after SMART passenger service begins are considered cumulative impacts which are evaluated in Impact NO-C-1 later in this section.

The Project's day-night average noise level calculated at a distance of 50 feet from the at-grade crossing is estimated to be 67 dBA DNL assuming up to one daytime freight train or SMART train roundtrip is occurring daily. The impact resulting from the operation of the new at-grade crossing would be significant when compared to the City of Santa Rosa Noise and Land Use Compatibility thresholds as predicted noise levels would exceed the City's exterior noise level threshold by up to 7 dBA DNL.

Mitigation: **Mitigation Measure NO-1: Implement Quiet Zones *(Preferred Project)***

To the extent feasible, and with consideration of balancing noise impacts and safety issues, the City shall, in conjunction with the rail operator, apply for Quiet Zone designations for the at-grade rail crossing to limit the use of train horns and other audible warning devices by installing crossing controls that meet Federal Railroad Administration (FRA) requirements.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Significant and Unavoidable)*

The implementation of Mitigation Measure NO-1 would substantially reduce train horn noise levels both outdoors and indoors at receptors near the Jennings Avenue at-grade crossing by eliminating the requirement for trains to sound their

horns. Nevertheless, train operators have discretion to sounds their horns whenever needed, so even with a Quiet Zone, train horn noise would not completely be eliminated. The FRA and the CPUC have jurisdiction over Quiet Zone applications and the application for a Quiet Zone must be made in agreement with the rail operator (SMART). Therefore, the City cannot commit at this time to Quiet Zone implementation, and the impact would therefore be significant and unavoidable. In addition, the application for a Quiet Zone must be made after construction of the at-grade rail crossing, so residents will be subject to train horn noise for a time prior to any approval of a Quiet Zone.

Analysis: *Rail Overcrossing Alternative (Less than Significant)*

<u>Construction</u>

As noted previously, there are no policies or regulations that would apply to Project-related construction noise. Temporary noise increases due to Rail Overcrossing Alternative construction activities are discussed in detail under Impact NO-4.

<u>Operation</u>

The operation of the Rail Overcrossing Alternative would not generate noise levels in excess of the noise standards established by the FTA or the City of Santa Rosa. The sounds of pedestrians and bicyclists using the overcrossing would be similar to existing conditions and would be well below future noise levels expected in the Project vicinity as a result of local and distant traffic noise sources, as well as intermittent passenger and freight train movements.

Mitigation: No mitigation is needed.

Impact: **NO-2: Would the Project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

<u>Construction</u>

Construction of the Preferred Project would include the following construction phases: site preparation, grading, and excavation; trenching and utilities; crossing construction; and paving. Major sources of groundborne vibration such as impact or vibratory pile drivers are not proposed as part of the Preferred Project.

The construction of the Preferred Project may generate perceptible vibration when heavy equipment or impact tools are used. Table 3.10-4 (Vibration Source Levels for Construction Equipment) presents typical vibration levels that could be expected from construction equipment at a distance of 25 feet. As indicated in Table 3.10-4, vibration levels produced by a vibratory roller can reach 0.210 inches/second, peak particle velocity (in/sec, PPV) at a distance of 25 feet. Jackhammers typically generate vibration levels of 0.035 in/sec PPV and drilling typically generates vibration levels of 0.09 in/sec PPV at a distance of 25 feet. Vibration levels would vary depending on soil conditions, construction methods, and equipment used.

Table 3.10-4 Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft. (in/sec)	Approximate Vibration Levels at 25 ft. (VdB)
Pile Driver (Impact)	upper range	1.158	112
	typical	0.644	104
Pile Driver (Sonic)	upper range	0.734	105
	typical	0.170	93
Clam shovel drop		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
	in rock	0.017	75
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: FTA 2006

A review of the construction equipment list for the Preferred Project was made to identify the specific pieces of construction equipment that would result in the highest vibration levels at nearby receptors. A vibratory roller would be used during the paving phase of the Preferred Project, and the nearest receptor would be located approximately 20 feet from portion of the Jennings Avenue crossing that would be repaved. At a distance of 20 feet, vibration levels produced by a vibratory roller would be approximately 0.268 in/sec PPV, below the 0.3 in/sec PPV threshold used to avoid cosmetic damage to buildings that are found to be structurally sound but where structural damage is a major concern. Vibration levels produced by other equipment proposed as part of the Preferred Project, at either the Jennings Avenue crossing site or at the potential crossing closure sites at W. Sixth, W. Seventh, or W. Eighth Streets, and at receptors located further from the primary work areas would also be less than the 0.3 in/sec PPV threshold.

Vibration levels generated by construction activities occurring near adjacent residential land uses would at times be perceptible, but would not be expected to result in cosmetic damage to these buildings. However, nighttime construction activities occurring within the SMART right-of-way at the Jennings Avenue crossing would have the potential to result in vibration levels that would exceed the 0.1 in/sec PPV significance threshold used to assess the potential for residential annoyance (the level at which vibration would be strongly perceptible).

The use of a vibratory roller within 50 feet of residential land uses would result in vibration levels greater than 0.1 in/sec PPV. The use of other heavy equipment or drilling equipment would result in vibration levels greater than 0.1 in/sec PPV within a distance of 20 feet. Therefore, nighttime construction activities associated with the at-grade crossing component of the Preferred Project would result in a significant impact.

Nighttime construction activities occurring within the SMART right-of-way at the selected crossing closure site would not have the potential to result in vibration levels that would exceed the 0.1 in/sec PPV significance threshold because the nearest receptors would be located at a greater distance from the project site, approximately 150 feet west from any of the three potential crossing closure sites. Nighttime construction activities associated with the crossing closure component of the Preferred Project would result in a less-than-significant impact.

Operation

The Preferred Project would consist of an at-grade pedestrian and bicycle rail crossing at Jennings Avenue. No sources of groundborne vibration are proposed as part of the Preferred Project, and the Project would not result in exposure of persons to or generation of excessive groundborne vibration levels. Groundborne noise occurs when groundborne vibration causes the ground surface and structures to radiate audible acoustical energy, and is primarily an issue for underground rail systems. The operation of the Preferred Project would not result in exposure of persons to or generation of excessive groundborne noise levels.

Mitigation: **Mitigation Measure NO-2: Reduce Vibration Levels *(Preferred Project)***

The City shall prohibit the use of heavy construction equipment within 20 feet of residential land uses, and vibratory rollers within 50 feet of residential land uses, during the early morning, evening and nighttime. For example, plate compactors and smaller, rubber-tired equipment may be utilized instead, as feasible.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

The implementation of the Mitigation Measure NO-2 would reduce the potential for residential annoyance due to construction vibration to a less-than-significant level, by prohibiting the use of heavy construction equipment near residences during sensitive time periods.

Analysis: *Rail Overcrossing Alternative (Less than Significant)*

Construction

Construction of the Rail Overcrossing Alternative would include similar construction phases as compared to the Preferred Project. Major sources of groundborne vibration such as impact or vibratory pile drivers are not proposed because the overcrossing would be supported on drilled piers. Vibration levels resulting from drilled piers are typically 0.089 in/sec PPV at a distance of 25 feet, similar to the vibration levels expected from a hoe-ram or large bulldozer. Vibration levels resulting from drilling typically decrease as the shaft is constructed because the distance between the vibration source (drilling head) and the receptor increases with the depth of the shaft. A review of the equipment list for the Rail Overcrossing Alternative shows that this alternative would require

many of the same pieces of construction equipment required to construct the Preferred Project. However, vibratory rollers would not be used at night, and other heavy equipment or drilling equipment would not be used within a distance of 40 feet of the nearest receptors. Therefore, daytime and nighttime construction activities associated with the Rail Overcrossing Alternative would result in a less than significant impact.

Operation

The Rail Overcrossing Alternative would consist of a pedestrian and bicycle rail overcrossing over the SMART rail corridor. Similar to the Preferred Project, no operational sources of groundborne vibration or groundborne noise are proposed. Therefore, the operation of the Rail Overcrossing Alternative would not result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. No operational impact would occur.

Mitigation: No mitigation is needed.

Impact: **NO-3: Would the Project result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Construction

Construction of the Preferred Project is anticipated to occur in the Summer of 2016 or Summer of 2017 and require approximately two months to complete. Construction noise occurring over the two-month duration of the Preferred Project would be considered temporary. A substantial permanent increase in ambient noise levels would not occur due to Preferred Project construction activities. The impact would be less than significant.

Operation

The operation of a new at-grade crossing at Jennings Avenue would result in the sounding of additional train horns to the north and south of Jennings Avenue. The day-night average noise level calculated at a distance of 50 feet from the at-grade crossing is calculated to be 67 dBA DNL under the existing plus Project scenario. The predicted noise level would exceed the existing ambient noise levels in the vicinity by up to 12 dBA DNL near measurement location LT-2 as the ambient noise monitoring survey results showed that existing noise levels in the vicinity ranged from 55 to 57 dBA DNL. Noise levels at receptors represented by measurement locations LT-1 and LT-3 would be increased by 15 dBA DNL and 7 dBA DNL, respectively, assuming that the train horns would be sounded within one-quarter mile of the new at-grade crossing. The impact resulting from the predicted existing plus Project noise level attributable to the sounding of train horns would be significant, because Project-generated noise levels at noise-sensitive receptors are calculated to increase by 5 dBA DNL or more above existing background noise levels.

The closure of one of the three rail crossings located at W. Sixth, W. Seventh, or W. Eighth Streets would redistribute vehicle trips and traffic volumes in the area.

A substantial permanent noise increase would occur if traffic due to the Preferred Project would increase noise levels by 5 dBA DNL at noise-sensitive receptors above existing background noise levels.

Traffic volume data for the Preferred Project contained in the traffic impact analysis were reviewed to calculate potential Project-related traffic noise level increases along roadways in the vicinity of the W. Sixth, W. Seventh, or the W. Eighth Street crossings. These data included turning movement counts at six study area intersections for existing conditions and projections for existing plus Project conditions assuming the closure of one of the three existing crossings. Roadway link volumes were calculated based on the turning movement data and compared to existing conditions to calculate the anticipated noise level increase under each crossing closure scenario. The review of the traffic data indicated that the Preferred Project would not substantially increase noise levels at sensitive receivers near the existing rail crossings located at W. Sixth, W. Seventh, or W. Eighth Streets. In most instances, traffic noise levels attributable to existing plus Project traffic conditions would increase by 0 to 2 dBA DNL.

The most affected roadway segments would be W. Sixth Street, west of Wilson Street, and W. Seventh Street, west of Wilson Street. Assuming the closure of the W. Sixth Street crossing, traffic noise levels along W. Seventh Street west of the intersection of Wilson Street are calculated to increase by a maximum of 3 to 4 dBA DNL. With the closure of the W. Seventh Street crossing, traffic noise levels along W. Sixth Street, west of Wilson Street, are calculated to increase by 3 dBA DNL above existing conditions. The closure of the crossing at W. Eighth Street would result in traffic noise increases up to 2 dBA DNL along W. Eighth Street east of North Dutton Avenue. A substantial permanent noise increase would not occur as traffic noise levels at noise-sensitive receptors are not calculated to increase by 5 dBA DNL or more above existing background noise levels. Traffic noise increases attributable to the Preferred Project would be considered less than significant.

The closure of one of the three rail crossings located at W. Sixth, W. Seventh, or W. Eighth Streets would eliminate the need for trains to sound their warning whistles within 1,320 feet of the selected crossing that would be closed under the Preferred Project. The potential rail crossing closure sites are located within approximately 300 feet of one another, and approximately 800 to 950 feet from crossings at W. Third Street and W. Ninth Street. Even with the closing of one of the three rail crossings located at W. Sixth, W. Seventh, or W. Eighth Streets, the downtown area would continue to be exposed to numerous whistle blasts due to the fact that many at-grade crossings would continue to exist. Because a train must sound its horn 1,320 feet prior to the crossing, and because each of the remaining crossings would be less than 1,320 feet apart even with a closure, no measureable reduction in noise levels would be expected to occur due to the closing of one of the three rail crossings.

Mitigation: **Mitigation Measure NO-1: Implement Quiet Zones *(Preferred Project)***

This mitigation measure is defined in Impact NO-1 for the Preferred Project.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Significant and Unavoidable)*

The implementation of Mitigation Measure NO-1 would substantially reduce train horn noise levels both outdoors and indoors at receptors within one-quarter mile of the Jennings Avenue at-grade crossing by eliminating the requirement for trains to sound their horns. However, the FRA has final jurisdiction over Quiet Zone applications; therefore, the City cannot commit to Quiet Zone implementation. If a Quiet Zone is established, train horns would not be required to be sounded to the north and south of Jennings Avenue, and therefore, the Project would not generate noise levels above the noise levels resulting from local and distant traffic noise sources, as well as intermittent passenger and freight train movements (without train horns).

Analysis: *Rail Overcrossing Alternative (Less than Significant)*

Construction

Construction of the Rail Overcrossing Alternative would occur over an approximately six-month period and would be temporary. A substantial permanent increase in ambient noise levels would not occur due to Rail Overcrossing Alternative construction activities. The impact would be less than significant.

Operation

The operation of the Rail Overcrossing Alternative would not produce noise levels that would result in a substantial permanent increase in ambient noise levels. Existing ambient noise levels in the vicinity of the Rail Overcrossing site range from 55 to 57 dBA DNL and result primarily from local and distant traffic noise sources, infrequent trains, and trail users. Future noise levels in the vicinity of the Rail Overcrossing Alternative will continue to result primarily from local and distant traffic noise sources, intermittent passenger and freight trains, and trail users. The sounds of persons using the Rail Overcrossing Alternative (e.g., voices) would not be expected to measurably contribute to existing or future noise levels and would not be expected to result in a substantial permanent increase in noise.

Mitigation: No mitigation is needed.

Impact: **NO-4: Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Construction

Construction of the Preferred Project would include the following construction phases: site preparation, grading, and excavation; trenching and utilities; crossing construction; and paving. The Project would cause both daytime and nighttime noise on some construction days.

Calculations made based on a review of the proposed construction equipment lists indicate that hourly average noise levels would range from 80 to 82 dBA L_{eq} at a distance of 50 feet from the center of the construction site during busy construction periods. The daytime exterior noise level threshold is 80 dBA L_{eq} for more than one month.

Daytime construction noise levels are calculated to exceed the 80 dBA L_{eq} threshold at receptors within 63 feet of the center of the construction site having direct line of sight (first-row receptors) to Project construction activities. Based on the estimated daytime construction noise levels, sensitive land uses within the vicinity of construction activities at Jennings Avenue would be exposed to substantial daytime construction noise levels over an approximately two-month construction period. The temporary impact of construction-related noise is significant.

Based on available sleep criteria data, an interior nighttime level of 35 dBA L_{eq} is considered acceptable for sleeping. Even with the windows open, a typical house achieves an approximately 15 dBA reduction and, therefore, an exterior noise level of 50 dBA L_{eq} would be required outdoors in order to maintain an acceptable interior noise environment of 35 dBA L_{eq}.

Nighttime construction noise levels are calculated to exceed the 50 dBA L_{eq} threshold at receptors within 2,000 feet of the center of the construction site (either the Jennings Avenue crossing or the selected crossing closure site) having direct line of sight (first-row receptors) to Project construction activities. Shielded receptors located beyond the first row within 1,120 feet of the center of the construction site would also be exposed to construction noise levels exceeding the 50 dBA L_{eq} threshold assuming that 5 dBA of noise reduction would be provided by the intervening first-row buildings. Nighttime construction activities would be expected on up to 10 nights during the approximate two-month construction period for the Jennings Avenue crossing component of the Preferred Project. Nighttime construction noise levels would exceed the 50 dBA L_{eq} noise level threshold for a period exceeding one week. The nighttime construction noise impact would be significant.

At the W. Sixth, W. Seventh, and W. Eighth Street Project areas, although daytime construction noise levels would temporarily exceed the 60 dBA L_{eq} noise level threshold, the impact from daytime construction noise over an approximately two-week construction period would be less than significant recognizing the relatively short duration of the construction activities.

At the W. Sixth, W. Seventh, and W. Eighth Street Project areas, nighttime construction activities would be expected on up to four nights when the crossing closure component of the Preferred Project is constructed. Nighttime construction noise levels would exceed the 50 dBA Leq noise level threshold for a period exceeding one day. Therefore, the impact would be significant.

Operation

Operational noise impacts attributable to the Preferred Project would be considered permanent and are evaluated under Impact NO-3.

Mitigation:

Mitigation Measure NO-3: Reduce Daytime Construction-related Noise *(Preferred Project and Rail Overcrossing Alternative)*

The City shall implement construction noise control measures during daytime construction activities at the Jennings Avenue site. Noise control measures shall include, but would not be limited to the following:

- All equipment driven by internal combustion engines shall be equipped with mufflers which are in good condition and appropriate for the equipment.
- The construction contractor shall utilize "quiet" models of air compressors and other stationary noise sources where technology exists.
- Unnecessary idling of internal combustion engines shall be prohibited.
- At all times during project grading and construction, stationary noise-generating equipment shall be located as far as practicable from sensitive receptors.
- All stationary construction equipment shall be placed so that the emitted noise is directed away from sensitive receptors nearest the project site.
- Construction staging areas shall be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.
- The construction contractor shall designate a "noise disturbance coordinator" who will be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and institute reasonable measures as warranted to correct the problem (e.g., to ensure that the measures above are implemented). A telephone number for the disturbance coordinator shall be conspicuously posted at the construction site.

Mitigation Measure NO-4: Reduce Nighttime Construction Noise *(Preferred Project and Rail Overcrossing Alternative)*

The City shall reduce nighttime construction noise at residences to 50 dBA L_{eq}, to the extent feasible. Specific measures that can be feasibly implemented include, but are not limited to, the following:

- Best available noise control practices (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) shall be used for all equipment and trucks in order to minimize construction noise impacts.
- If impact equipment (e.g., jack hammers, pavement breakers, rock drills) is needed during Project construction, hydraulically or electric-powered equipment shall be used wherever feasible to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used. External jackets on the tools themselves shall also be used if available and feasible.

- To the extent consistent with applicable regulations and safety considerations, operation of vehicles requiring use of back-up beepers shall be avoided near sensitive receptors during nighttime hours and/or, the work sites shall be arranged in a way that avoids the need for any reverse motions of large trucks or the sounding of any reverse motion alarms during nighttime work. If these measures are not feasible, trucks operating during the nighttime hours with reverse motion alarms must be outfitted with SAE J994 Class D alarms (ambient-adjusting, or "smart alarms" that automatically adjust the alarm to 5 dBA above the ambient near the operating equipment).
- Stationary noise sources shall be located as far from sensitive noise receptors as feasible. If they must be located near receptors, adequate muffling (with enclosures where feasible and appropriate) shall be used. Enclosure openings or venting shall face away from sensitive noise receptors.
- A designated Project liaison shall be responsible for responding to noise complaints during the construction phases. The name and phone number of the liaison shall be conspicuously posted at construction areas and on all advanced notifications. This person shall take steps to resolve complaints, including periodic noise monitoring, if necessary. Results of noise monitoring shall be presented at regular Project meetings with the contractor. The liaison shall coordinate with the contractor to modify any construction activities that generate noise levels above the levels identified in the performance standards listed in this measure.
- A reporting program shall be required that documents complaints received, actions taken to resolve problems, and effectiveness of these actions.
- Locate equipment at the work area to maximize the distance to noise-sensitive receptors and to take advantage of any shielding that may be provided by other on-site equipment.
- Operate the equipment mindful of the residential uses nearby, especially during the nighttime hours.
- Maintain respectful and orderly conduct among workers, including worker conversation noise during the nighttime hours.
- Maintain the equipment properly to minimize extraneous noise due to squeaking or rubbing machinery parts, damaged mufflers, or misfiring engines.
- Provide advance notice to nearby residents prior to starting work at each work site, with information regarding anticipated schedule, hours of operation and a Project contact person.
- Schedule work and deliveries to minimize noise-generating activities during nighttime hours at work sites (e.g., no deliveries or non-essential work).
- Utilize sound blankets to reduce noise from the significant stationary noise sources.

Prior to the initiation of nighttime construction, the City shall require that noise measurements and projections be completed by a qualified professional using final engineering plans to identify the sensitive receptors that could be subject to construction noise of 50 dBA L_{eq} or greater during nighttime construction activities. The affected sensitive receptors shall be documented by address and location map in a report provided to the City.

In addition, the City shall monitor actual construction noise levels during nighttime construction.

Sensitive receptors who either have been exposed or are identified by the noise measurement report with the potential to be exposed to nighttime construction noise levels of 50 dBA L_{eq} or greater, shall be offered vouchers for alternate accommodations for those nighttime construction periods projected to cause such noise levels.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

The implementation of Mitigation Measure NO-3 would reduce daytime construction noise impacts at nearby residential land uses from temporary construction noise to a less-than-significant level by requiring mufflers, quiet equipment, and proper location and orientation of equipment to reduce construction noise levels.

The implementation of Mitigation Measure NO-4 would reduce construction noise levels by 5 to 10 dBA L_{eq}, and the potential for residential annoyance due to construction noise would be reduced to a less-than-significant level because residents would have the option of selecting alternate accommodations during nighttime work periods.

Analysis: *Rail Overcrossing Alternative (Significant)*

<u>Construction</u>

Construction of the Rail Overcrossing Alternative would include the following construction phases: site preparation, grading, and excavation; trenching and utilities; crossing construction; and paving. Calculations made based on a review of the proposed equipment lists indicate that hourly average noise levels would range from 79 to 88 dBA L_{eq} at a distance of 50 feet from the center of the construction site during busy construction periods.

Daytime construction noise levels are calculated to exceed the 80 dBA L_{eq} threshold at receptors within 126 feet of the center of the construction site having direct line of sight (first-row receptors) to Project construction activities. Shielded receptors located beyond the first row would not be exposed to construction noise levels exceeding the 80 dBA L_{eq} threshold assuming that 5 dBA of noise reduction would be provided by the intervening first-row buildings. Based on the estimated daytime construction noise levels, sensitive land uses within the vicinity of construction activities for the Rail Overcrossing Alternative would be exposed to substantial daytime construction noise levels over an approximately six-month construction period. The temporary impact of construction-related noise is significant.

Nighttime construction noise levels are calculated to exceed the 50 dBA L_{eq} threshold at receptors within 4,000 feet of the center of the construction site having direct line of sight (first-row receptors) to Project construction activities. Shielded receptors located beyond the first row within 2,240 feet of the center of the construction site would also be exposed to construction noise levels exceeding the 50 dBA L_{eq} threshold assuming that 5 dBA of noise reduction would be provided by the intervening first-row buildings. Nighttime construction activities would be expected on up to 53 nights during the approximately six-month construction period. Nighttime construction noise levels would exceed the 50 dBA L_{eq} noise level threshold for a period exceeding one day. Therefore, the impact would be significant.

<u>Operation</u>

Operational noise impacts attributable to the Rail Crossing Alternative would be considered permanent and are evaluated under Impact NO-3.

Mitigation: **Mitigation Measure NO-3: Reduce Daytime Construction-related Noise *(Preferred Project and Rail Overcrossing Alternative)***

This mitigation measure is defined in Impact NO-4 for the Preferred Project.

Mitigation Measure NO-4: Reduce Nighttime Construction Noise *(Preferred Project and Rail Overcrossing Alternative)*

This mitigation measure is defined in Impact NO-4 for the Preferred Project.

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

The implementation of Mitigation Measure NO-3 would reduce daytime construction noise impacts at nearby residential land uses from temporary construction noise to a less-than-significant level by requiring mufflers, quiet equipment, and proper location and orientation of equipment to reduce construction noise levels.

The implementation of Mitigation Measure NO-4 would reduce construction noise levels by 5 to 10 dBA L_{eq}, and the potential for residential annoyance due to construction noise would be reduced to a less-than-significant level because residents would have the option of selecting alternate accommodations during nighttime work periods.

3.10.7 Cumulative Impacts

Impact: **NO-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to noise?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

<u>Construction</u>

The nearest cumulative projects that could be constructed concurrently with the Preferred Project at the Jennings Avenue site are the Range Ranch and the Edwards Office Building projects. Range Ranch is currently under construction approximately 700 feet to the east of the Jennings Avenue crossing and the Edwards Office Building is planned near the intersection of Edwards Avenue and

Range Avenue, approximately 850 feet from the Project site. The Range Ranch project will likely be built prior to the initiation of construction activities for the Preferred Project, so cumulative construction noise impacts would not be expected. The distance separating the sites from one another and acoustical shielding provided by intervening structures is such that construction noise levels, assuming both sites were undergoing construction simultaneously, would not be substantially increased and result in a significant cumulative noise impact at receptors common to both projects. The Project's construction would not contribute to a significant cumulative impact.

Operation

Impacts relative to train horn noise after SMART passenger service begins are considered cumulative impacts. The operation of the Preferred Project, in combination with regular passenger service by SMART, a cumulative project, would result in a significant noise impact at receptors within one-quarter mile of the at-grade crossing.

As documented in the SMART 2005 DEIR and the SMART 2008 Draft Supplemental EIR, the sounding of train horns would substantially increase ambient noise levels near at-grade crossings. The Preferred Project would add an additional at-grade crossing, thereby exposing additional receptors within one-quarter mile of the at-grade crossing to train horn noise. Under the cumulative scenario, receptors to the north of the at-grade crossing, located near the new North Santa Rosa SMART station at Guerneville Road will already be exposed to SMART horn noise due to the proximity of these receptors to the SMART station.

With the Project, the day-night average noise level calculated at a distance of 50 feet from the at-grade crossing is calculated to be 85 dBA DNL assuming that under the cumulative scenario there would be 12 SMART roundtrips during the early morning, daytime, and early evening hours and three freight train roundtrips occurring primarily at night. The predicted noise level at 50 feet would exceed the predicted cumulative noise level of 64 dBA DNL due to combined passenger and freight service (without horns) by 21 dBA DNL. The impact resulting from the operation of the new at-grade crossing, in addition to the SMART project (i.e., regular passenger service), would be significant when compared to the City of Santa Rosa Noise and Land Use Compatibility thresholds as predicted noise levels would exceed the City's exterior noise level threshold by up to 25 dBA DNL. The predicted noise level would also exceed the existing ambient noise levels in the vicinity by up to 30 dBA DNL at measuring location LT-2 as the ambient noise monitoring survey results showed that existing noise levels in the vicinity ranged from 55 to 57 dBA DNL. Noise levels at receptors represented by measurement locations LT-1 and LT-3 would be increased by 33 dBA DNL and 25 dBA DNL, respectively, assuming that the train horns would be sounded within one-quarter mile of the new at-grade crossing. The impact resulting from the predicted cumulative noise level attributable to the sounding of train horns would be significant, and the Project's contribution to the significant impact would be cumulatively considerable, because Project-generated noise levels at noise-sensitive receptors are calculated to increase by 5 dBA DNL or more above existing background noise levels.

The Project would result in a cumulatively considerable contribution to a significant traffic noise impact if existing sensitive receptors would be exposed to cumulative traffic noise level increases greater than 5 dBA DNL where the Project would make a cumulatively considerable contribution to the overall traffic noise level increase. Cumulative traffic noise level increases were calculated by comparing “Cumulative” traffic volumes to “Existing” traffic volumes. Cumulative plus Project traffic noise level increases were calculated in the same manner by comparing “Cumulative Plus Project” traffic volumes to “Existing” traffic volumes.

A comparison of these traffic volume scenarios shows that cumulative traffic noise levels will not be substantially increased along roadways in the vicinity of the potential crossing closures at W. Sixth, W. Seventh, or W. Eighth Streets. The cumulative traffic noise impact would be less than significant because existing sensitive receptors would not be exposed to cumulative traffic noise levels 5 dBA DNL greater than existing ambient noise levels.

Mitigation: **Mitigation Measure NO-1: Implement Quiet Zones *(Preferred Project)***

This mitigation measure is defined in Impact NO-1 for the Preferred Project.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Significant and Unavoidable)*

The implementation of Mitigation Measure NO-1 would substantially reduce train horn noise levels both outdoors and indoors at receptors near the Jennings Avenue at-grade crossing by eliminating the requirement for trains to sound their horns. Nevertheless, train operators have discretion to sounds their horns whenever needed, so even with a Quiet Zone, train horn noise would not completely be eliminated. The FRA and the CPUC have jurisdiction over Quiet Zone applications and the application for a Quiet Zone must be made in agreement with the rail operator (SMART). In addition, the CPUC must approve any added safety equipment to be installed at the crossing. Therefore, the City cannot commit at this time to Quiet Zone implementation, and the impact would therefore be significant and unavoidable. In addition, the application for a Quiet Zone must be made after construction of the at-grade rail crossing, so residents will be subject to train horn noise for a time prior to any approval of a Quiet Zone.

Analysis: *Rail Overcrossing Alternative (Less than Significant)*

Construction

Similar to the Preferred Project, the distance separating the Rail Overcrossing Alternative site from the Edwards Avenue or Range Avenue cumulative projects and the acoustical shielding provided by intervening structures is such that construction noise levels, assuming both sites were undergoing construction simultaneously, would not be substantially increased and result in a significant cumulative noise impact at receptors.

Operation

A rail overcrossing at Jennings Avenue would provide a pedestrian and bicycle pathway over the rail corridor using a bridge structure. The elevation difference would allow trains to travel through the grade-separated crossing at the same time that bicyclists and pedestrians are utilizing the overcrossing structure.

Because the rail overcrossing would be grade-separated, the sounding of train horns associated with freight and passenger rail service would not be required.

The operation of the Rail Overcrossing Alternative would not generate a substantial amount of noise (only minor sounds, generated by pedestrians and bicyclists using the overcrossing, would be expected). Project-generated operational noise would not combine with operational noise from cumulative Projects in the vicinity to result in a significant cumulative noise impact at receptors. Therefore, the Rail Overcrossing Alternative would not have a considerable contribution to a significant cumulative impact.

Mitigation: No mitigation is needed.

3.10.8 References

California Department of Transportation (Caltrans). 2013. *Transportation and Construction Vibration Guidance Manual*.

California Public Utilities Commission (CPUC). 2014a. *Quiet Zones*. Website Accessed October 10, 2014 at: http://www.cpuc.ca.gov/PUC/safety/Rail/Crossings/quietzones.htm

CPUC. 2014b. Personal Communication, Ken Chiang, October 10, 2014.

Sonoma-Marin Area Rail Transit District (SMART). 2006. *Environmental Impact Report for the Sonoma-Marin Area Rail Transit Project*. June.

SMART. 2008. *Draft Supplemental Environmental Impact Report for the Sonoma-Marin Area Rail Transit Project, Revised Cumulative Impacts.*

SMART. 2014. Personal Communication, Jon Kerruish, June 11, 2014.

U.S. Department of Transportation, Federal Highway Administration (FHWA). 2006. *FHWA Roadway Construction Noise Model User's Guide*. January.

U.S. Department of Transportation, Federal Transit Administration (FTA), Office of Planning and Environment. 2006. *Transit Noise and Vibration Impact Assessment*. May.

3.11 Public Services and Recreation

This section evaluates the potential impacts related to public services and recreational resources during construction and operation of the Project. To provide the basis for this evaluation, the Setting section of this chapter describes the existing public services and recreational resources in the Project area. Public services and recreational facilities discussed in this section include fire protection, law enforcement, schools, parks, and other public facilities. The evaluation section establishes the thresholds of significance, evaluates potential public services and recreational impacts, and identifies appropriate mitigation, as necessary.

3.11.1 Impacts Evaluated in Other Sections

The following subjects are related to public services and recreation, but are evaluated in other sections of this document:

- Potential impacts to bicycle and pedestrian trails are evaluated in Section 3.12, Transportation.
- Potential impacts to emergency access are evaluated in Section 3.12, Transportation.

3.11.2 Setting

Public Services

Fire Protection and Emergency Medical Services

Fire protection and emergency medical services in the Project area are primarily served by the Santa Rosa Fire Department (SRFD). The SRFD provides services for the City as well as the Roseland Fire Protection District through a contractual agreement. There are eleven fire stations total in the City. In 2013, the SRFD responded to 22,322 service calls. The SRFD also has an agreement with the Rincon Valley Fire Protection District, with whom they jointly utilize the equipment and personnel assigned to Rincon Valley. (SRFD 2013)

The City Council has set a goal for the Fire Department of responding to 80 percent of all calls for service within four minutes or less, to 90 percent of all calls for service within five minutes or less, and to all calls for service within six minutes or less (Santa Rosa 2009a, 2009b). In 2013, the average code 3 response time was four minutes and 16 seconds. The department's current standard is to arrive on scene within five minutes of being dispatched. The response times were within five minutes 69% of the time (SRFD 2013).

The Santa Rosa Emergency Operations Plan (EOP), updated in August 2013, identifies the City's emergency planning, organization and response policies and procedures. It addresses how the City will respond to extraordinary events or disasters, from preparation through recovery, and the responsibilities of each department and emergency operations center position. It also addresses the integration and coordination with other governmental levels and special districts. The City's Plan does not designate specific evacuation routes or sites within the City (Santa Rosa 2013).

The eleven fire stations in the City have an engine company and are staffed 24 hours per day. The engine companies are staffed with a captain, an engineer, and a firefighter. In addition, the Headquarters and Station 2 contain two ladder trucks with two engineers, a firefighter, and a captain. The nearest fire station to the Jennings Avenue site is Fire Department Station 2 located at 65 Stony Circle in Santa Rosa. The nearest fire station to W. Sixth Street, W. Seventh Street, and W. Eighth Street is the Headquarters Station located at 955 Sonoma Avenue in Santa Rosa.

Police Protection Services

The Santa Rosa Police Department (SRPD) provides neighborhood-oriented policing services through patrol operations and traffic enforcement. The SRPD has 247 employees working within the community to provide public safety services, including 171 sworn positions and approximately 76 civilian staff (Santa Rosa 2012; SRPD 2014). Neighborhood-oriented policing is based on encouraging citizen input and involvement to resolve issues concerning public safety, law enforcement, and criminal activity throughout the City (Santa Rosa 2009a). On the highways and within the unincorporated areas, the Sonoma County Sheriff's Office operates criminal law enforcement and the California Highway Patrol assists with traffic enforcement. Mutual aid between neighboring law enforcement agencies is provided as needed (Santa Rosa 2009a). The Santa Rosa Police Department located at 965 Sonoma Avenue is the nearest police station to the Jennings Avenue crossing Project area (approximately 2.5 miles away) and to the closure of the rail crossing at either W. Sixth Street, W. Seventh Street, or W. Eighth Street (approximately 1.5 miles away).

The City's standard for police service requires the SRPD to provide for citizen safety through an expedient response to emergency calls, requiring response standards at six minutes for emergency calls (Priority One), 14 minutes for urgent calls (Priority Two), and 32 minutes for routine calls (Priority Three) (Santa Rosa 2009a, 2009b; SRPD 2014). In 2011, the SRPD's average response times were five minutes and 39 seconds for Priority One calls, of which there were 5,903 calls for service, nine minutes and 35 seconds for Priority Two calls, of which there were 27,229 calls for service, and 19 minutes two seconds for Priority Three calls for service, of which there were 15,265 calls for service (SRPD 2012).

Public Schools

The Santa Rosa public school system consists of eight public school districts. Santa Rosa City High School District is a grade 7–12 district, Piner-Olivet is a grade K–8 district, and there are also six smaller elementary school districts: Bellevue, Bennett Valley, Rincon Valley, Roseland, Santa Rosa City, and Wright (Santa Rosa 2009b). The nearest public school to the Jennings Avenue Project area is Helen M. Lehman Elementary School, which is located on Jennings Avenue approximately one-half mile to the west.

According to the City's General Plan, many Santa Rosa schools are at or near capacity (Santa Rosa 2009b). As of the 2013–2014 school year, there were a total of approximately 16,113 students enrolled in the Santa Rosa School District programs, including alternative education, charter schools, and special day classes (Santa Rosa City School 2013).

The number of students enrolled in Santa Rosa schools is projected to rise by approximately 11,500 students by 2035. In response to projected demand for new middle and elementary schools during the next 25 years, the City has identified future school sites in the General Plan 2035. Two middle school sites and four elementary school sites are proposed to accommodate the City's student population. However, the proposed locations have not been specified. (Santa Rosa 2009b)

Recreation

Parks and Recreational Facilities

The Santa Rosa Recreation and Parks Department operates and maintains 62 parks, a total of approximately 531 acres (Santa Rosa 2009b).

The City maintains a park standard of six acres of parkland per 1,000 residents. The City Council determines the ratio of neighborhood and community parkland, school playgrounds, and open space that will satisfy this standard. Currently, this ratio is 3.5 acres of parkland per 1,000 residents, as well as 1.4 acres of school recreational land and 1.1 acres of public-serving open space. (Santa Rosa 2009b)

3.11.3 Regulatory Framework

Federal

There are no federal regulations governing public services or recreational resources that apply to the Project.

State

There are no State regulations governing public services or recreational resources that apply to the Project.

Regional and Local

City of Santa Rosa General Plan Goals and Policies

The following are the goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.

PSF-E	**Provide fire and police services that ensure the safety of the community.**
PSF-E-1	Provide for citizen safety through expedient response to emergency calls.
	1. The Fire Department shall achieve 90 percent performance of arrival of the first fire company at an emergency within 5 minutes of notification by the dispatch center.
	2. The Fire Department shall achieve 90 percent performance of arrival of all units on first alarm fire suppression incidents within 9 minutes of notification by the dispatch center.
PSF-E-2	Provide for the safety of Santa Rosa citizens by maintaining efficient, well-trained, and adequately equipped police and fire personnel.

North Santa Rosa Station Area Specific Plan Goals and Policies

The following are the goals and policies from the *North Santa Rosa Station Area Specific Plan* that are applicable to the Project.

PF-9	**Provide fire and police services that ensure the safety of the Plan Area community.**
PF-9.2	Require new development along the SMART rail corridor to comply with fire department requirements for equipment access and circulation.

Downtown Santa Rosa Station Area Specific Plan Goals and Policies

The following are the goals and policies from the *Downtown Santa Rosa Station Area Specific Plan* that are applicable to the Project.

SP-UPS-7 **Provide fire and police services that ensure the safety of the Plan Area community.**

SP-UPS-7.3 Require new development along the SMART rail corridor to comply with Fire Department requirements for equipment access and circulation.

3.11.4 Evaluation Criteria and Significance Thresholds

Table 3.11-1 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
PSR-1: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services: fire protection, police protection, schools, parks, and/or other public facilities?	Increase in population. Inability to meet response time goals.	CEQA Guidelines Appendix G, Checklist Item XIV (a) City of Santa Rosa General Plan 2035 North Santa Rosa Station Area Plan Downtown Station Area Specific Plan
PSR-2: Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	Increase in population.	CEQA Guidelines Appendix G, Checklist Item XV (a) City of Santa Rosa General Plan 2035 North Santa Rosa Station Area Plan Downtown Station Area Specific Plan

Areas of No Project Impact

The Project would not result in impacts related to one of the evaluation criteria identified in Appendix G of the current CEQA Guidelines. For the reasons presented below, the following evaluation criterion is not applicable to the Project.

- ***Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.***

  The Project does not propose the construction or expansion of recreational facilities. Therefore, this significance criterion is not applicable to the Project and is not discussed further. For discussion regarding bicycle and pedestrian trails, please refer to Section 3.12, Transportation.

3.11.5 Methodology

Potential impacts to public services and recreational facilities are evaluated for both construction and operational activities. The evaluation considers whether the Project would affect the City's existing public services, including fire protection, law enforcement, emergency medical and educational services and facilities by increasing the population or affecting the current service ratios/response times. The effect on population growth and the City's existing service ratios for schools and parks was determined by considering the Project elements and whether they would directly or indirectly increase population. The potential impacts to the SRFD and SRPD response times was determined by an evaluation that calculated the extent of the re-routing of vehicles that would occur due to the rail crossing closure activities and the effect that would have to the City's current response times.

3.11.6 Impacts and Mitigation Measures

Table 3.11-2 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.	
PSR-1: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, and/or other public facilities?	LS	LS	LS	LS
PSR-2: Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	LS	LS	LS	NI
PSR-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to public services and recreational resources?	LS	LS	LS	NI

Notes: NI = No Impact
LS = Less than Significant

Impact: **PSR-1: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, and/or other public facilities?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

<u>Construction and Operation</u>

Fire Protection and Emergency Medical Services

As discussed in the Setting, the City Council has designated specific response times for the SRFD, which are detailed in the City's General Plan. The Preferred Project would not indirectly or directly increase population, and therefore would not require new or physically altered fire protection facilities. However, the Preferred Project would require the closure of a rail crossing at either W. Sixth Street, W. Seventh Street, or W. Eighth Street, which could impact SRFD response times.

The area of the potential rail crossing closures is served by three fires stations, #1 at 955 Sonoma Avenue, #2 at 65 Stony Circle, and #8 at 830 Burbank Avenue. As stated in Appendix G (Traffic Impact Analysis Report), with a closure at W. Sixth Street, the distance of a probable route between the closure site and the closest fire station would be increased by approximately 580 feet. No change in distance would occur if the closure occurred at W. Seventh Street. With a closure at W. Eighth Street, the distance of a probable route between the closure site and the closest fire station would be increased by approximately 1,040 feet. These increased distances at W. Sixth Street and W. Eighth Street would not cause the SRPD to be unable to meet their response time goals (SRFD 2014). Therefore, the impact would be less than significant.

Refer to Section 3.12, Transportation, for an evaluation of impacts to emergency access.

Police Protection Services

As discussed in the, Setting, the General Plan prescribes a standard for SRPD response times. Similar to the fire protection services evaluation above, the Preferred Project would not require new or physically altered police protection facilities because it would not increase population. In addition, the rail crossing closure of either W. Sixth Street, W. Seventh Street, or W. Eighth Street required by the Preferred Project would not tend to impact SRPD response times, because police services are located throughout the City at any given time. The SRPD has goals set for responding to an emergency situation and the dispatch officer closest to the particular site is expected to respond in accordance with those goals. Therefore, the Preferred Project would not require a new or physically altered police protection facility to meet the Department's response time goals. The impact would be less than significant.

Public Schools, Parks, and Other Public Facilities

The Preferred Project would not result in the provision of or need for new or physically altered schools, parks, or other public facilities, because it would not increase population that would generate a demand for such facilities. No impact would occur.

Analysis: *Rail Overcrossing Alternative (Less than Significant)*

Construction and Operation

Construction and operation of the Rail Overcrossing Alternative would not directly or indirectly increase population, and therefore would not generate a substantial demand for fire protection services, police protection services, schools, and parks. The Rail Overcrossing Alternative would not require a rail crossing closure at W. Sixth Street, W. Seventh Street, or W. Eighth Street, and thus would not require the re-routing of existing emergency vehicles. Therefore, the Rail Overcrossing Alternative would not require new or physically altered governmental facilities in order to maintain the current service ratios or response times for the City's public services including fire protection services, police protection services, schools, parks, and other public facilities. The impact is less than significant.

Mitigation: *No mitigation is needed.*

Impact: **PSR-2: Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Construction and Operation

As discussed above in Section 3.11.2 (Setting, Parks and Recreational Facilities), several recreational facilities are located throughout the City. The Preferred Project would provide a CPUC-approved pedestrian and bicycle rail crossing at Jennings Avenue that would not independently generate population growth. The proposed rail crossing would not directly or indirectly increase the existing population or housing supply of the Project area; and therefore, no increased demand or use of parks and other recreational resources would occur.

However, the closure of a rail crossing at W. Sixth Street, W. Seventh Street, or W. Eighth Street could affect individual access to parks or other recreational facilities. This could then result in a divided use of the facilities. There are several parks and other recreational facilities located on either side of the rail corridor including the DeTurk Round Barn Park on the west side of the closure and Depot Park on the east side. Because parks would be available on either side of the rail corridor and other east-west connections would remain within walking distance, and because the Preferred Project would not increase population growth that would generate an additional demand for recreational facilities, the impact related to the increased use of existing recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated is less than significant.

Analysis: *Rail Overcrossing Alternative (No Impact)*

Construction and Operation

The Rail Overcrossing Alternative is intended to provide a CPUC-approved pedestrian and bicycle rail crossing at Jennings Avenue and would not independently generate or increase population growth. Therefore, the Rail Overcrossing Alternative would not directly or indirectly increase the demand for recreational facilities, or effect accessibility of parks located in surrounding areas. No impact would occur.

Mitigation: No mitigation is needed.

3.11.7 Cumulative Impacts

Impact: **PSR-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to public services and recreational resources?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

The only impact to public services and recreation identified for the at-grade rail crossing would be that the rail crossing closures could extend the distance by which an emergency vehicle travels by up to 1,040 feet. However, even with other cumulative projects (as identified in Section 3.0, Table 3-1) this small route deviation would not result in a cumulative considerable contribution to the need for new or altered government facilities.

Analysis: *Rail Overcrossing Alternative (No Impact)*

No impacts to public services and recreation were identified from implementation of the Rail Overcrossing Alternative. Therefore, the Rail Overcrossing Alternative would not contribute to a significant cumulative impact relative to public services and recreation.

3.11.8 References

Santa Rosa, City of (Santa Rosa). 2007. *Downtown Station Area Specific Plan Program EIR.* February.

Santa Rosa. 2009a. *General Plan 2035 Draft Environmental Impact Report.* March.

Santa Rosa. 2009b. *Santa Rosa General Plan 2035*. November.

Santa Rosa. 2012. *North Santa Rosa Station Area Specific Plan Draft Environmental Impact Report*. April.

Santa Rosa, Fire Department (SRFD). 2013. *Fire Department Statistics for 2013.* Website Accessed July 23, 2014 at: http://ci.santa-rosa.ca.us/departments/fire/fire_stations/stats_information/Pages/default.aspx.

SRFD. 2014. Personal Communication, William Shubin, Deputy Fire Chief, August 2014.

Santa Rosa, Police Department (SRPD). 2012. *Santa Rosa Police Department Monthly Staff Activity Report*. December.

SRPD. 2014. *Message from the Chief of Police.* Website Accessed July 23, 2014 at: http://ci.santa-rosa.ca.us/departments/police/aboutus/Pages/MessageFromtheChief.aspx.

Santa Rosa City School, Office of Business Services. 2013. *Enrollment Projections for 2014-2015*. October.

3.12 Transportation

This section evaluates the potential impacts related to transportation during construction and operation of the Project. To provide the basis for this evaluation, the Setting section describes the existing conditions related to transportation and circulation for the Project areas. The evaluation section establishes the thresholds of significance, evaluates potential transportation impacts, and identifies the significance of impacts.

3.12.1 Impacts Evaluated in Other Sections

The following subjects are related to transportation, but are evaluated in other sections of this document:

- Potential impacts related to interfering with an adopted emergency response plan, and with the transport of hazardous materials during construction, are addressed in Section 3.7, Hazards and Hazardous Materials.
- Potential impacts related to increases in ambient noise levels due to changes in circulation are addressed in Section 3.10, Noise.
- Potential impacts related to the need for physically altered governmental facilities for emergency response are addressed in Section 3.11, Public Services and Recreation.

3.12.2 Setting

Local Roadways

Jennings Avenue Project Area

Jennings Avenue in the Project area runs perpendicular to the existing Sonoma-Marin Area Rail Transit (SMART) rail corridor. Within the Project area, Jennings Avenue is a local road serving mainly residential land uses, providing one lane in each direction. Jennings Avenue currently terminates on both sides of the rail corridor, with guardrails blocking vehicular access. East of the rail corridor, parking is prohibited along the south side of Jennings Avenue. West of the rail corridor, parking is permitted on the street in both directions.

The nearest cross streets intersecting Jennings Avenue are Herbert Street on east side of the rail corridor, and N. Dutton Avenue on the west side of the corridor. The intersection of Herbert Street and Jennings Avenue is currently unsignalized, with no regulated stop control. Herbert Street is a local road serving residential land uses, with one lane in each direction. The intersection of N. Dutton Avenue and Jennings Avenue is also unsignalized, with stop control on both approaches of Jennings Avenue in the east-west direction. N. Dutton Avenue features two lanes in each direction, with a shared left turn lane and Class II bike lanes on both approaches. The south approach of N. Dutton Avenue currently has a marked crosswalk across the intersection.

On the west side of the rail corridor, a partial sidewalk is present only on the north side of Jennings Avenue, while on the east side of the rail corridor, sidewalks are present on both sides of Jennings Avenue.

W. Sixth, W. Seventh, and W. Eighth Street Project Areas

W. Sixth Street, W. Seventh Street, and W. Eighth Street cross the SMART rail corridor and intersect with Wilson Street in downtown Santa Rosa. Wilson Street, W. Sixth Street, W. Seventh Street, and W. Eighth Street are all two-way streets with one lane in each direction and sidewalk

facilities. W. Sixth Street provides a connection under Highway 101 and links the Railroad Square and Courthouse Square areas for pedestrians, bicyclists, and vehicles.

The Wilson Street corridor runs parallel to the rail corridor and includes unsignalized intersections with W. Sixth Street, W. Seventh Street, and W. Eighth Street. Wilson Street at W. Seventh Street and W. Eighth Street is an unsignalized intersection with stop control only in the east-west direction. The intersection of Wilson at W. Sixth Street is unsignalized with a four-way stop control.

W. Ninth Street is a two-way street with one lane in each direction, and includes a center turn lane, bike lanes in both directions, and sidewalk facilities. W. Ninth Street shares an unsignalized, four-way stop intersection with Wilson Street.

The N. Dutton Avenue corridor runs roughly parallel to the rail corridor about ¼ mile to the west and shares a signalized intersection with W. Ninth Street, as well as an unsignalized intersection with W. Eighth Street. N. Dutton Avenue is a two-way street with two lanes in both directions, a center turn lane, and sidewalk facilities.

W. Sixth Street near the rail corridor includes a sidewalk on the north side of the roadway, whereas W. Seventh Street, W. Eighth Street, and Wilson Street each have continuous sidewalks on both sides of the roadway. At the intersections of these four corridors, curb ramps and marked crosswalks are present.

In preparation for regular train service, SMART installed medians on the westbound approach to the rail corridor at W. Sixth Street in 2014.

Transit Service

Santa Rosa City Bus

The Project area is served by the Santa Rosa City Bus transit network. In the Jennings Avenue Project area, the nearest transit route is Route 17, Piner Road, which travels along N. Dutton Avenue west of Jennings Avenue. In addition, Route 15, Stony Point Road, provides service along Guerneville Road between the Northside Transfer Station and Marlow Road. No transit routes currently utilize Jennings Avenue.

In the W. Sixth Street, W. Seventh Street, and W. Eighth Street Project area, the nearest transit route is Route 3, W. Ninth Street, which provides westbound service from the Downtown Transit Mall along Wilson Street from W. Fifth Street to W. Eighth Street. Route 3 utilizes the existing at-grade rail crossing at W. Eighth Street to access the west side of the rail corridor, before heading north along Donahue Street to W. Ninth Street.

Sonoma-Marin Area Rail Transit

SMART is a voter-approved passenger rail and bicycle-pedestrian pathway project located in Sonoma and Marin counties. It will serve a 70-mile corridor from Cloverdale to Larkspur, with a first phase from Santa Rosa to San Rafael. SMART stations are under design at Guerneville Road, approximately one-quarter mile north of Jennings Avenue, and in Railroad Square, in the vicinity of W. Sixth, W. Seventh, and W. Eighth Street.

Bicycle and Pedestrian Network

The City's Bicycle and Pedestrian Master Plan classifies bicycle facilities into four categories:

- Class I (Bicycle Path) – A path providing a completely separate right-of-way for the exclusive use of bicycles and pedestrians with the cross-flow minimized.
- Class II (Bicycle Lane) – A portion of a roadway that has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.
- Class III (Bicycle Route) – A paved, shared roadway which has been designated by signing as a preferred route for bicycle use.
- Bicycle Boulevard – A residential street with low volume, low speed where bicycles have priority over automobiles by discouraging non-local motor vehicle traffic. Conflicts between bicycles and automobiles are minimized and bicycle travel time is reduced by the removal of unwarranted stop signs and other impediments to bicycle travel. Design features include a variety of different street treatments such as traffic calming, traffic diverters, and bicycle actuated traffic signals.

No dedicated bicycle lanes currently exist in the Jennings Avenue and W. Sixth, W. Seventh, and W. Eighth Street Project areas. An existing Class II bicycle lane along W. Sixth Street east of Davis Street provides a connection under Highway 101.

Policy C-5.6 of the North Station Area Specific Plan proposes to implement a bicycle boulevard along the length of Jennings Avenue. The site for the North Santa Rosa SMART station on Guerneville Road can be accessed from the Jennings Project area via either N. Dutton Avenue or the Sonoma County Water Agency maintenance road along Steele Creek.

The City's Bicycle and Pedestrian Master Plan proposes a future bicycle boulevard at W. Sixth Street that would cross the SMART rail corridor. A Class I bicycle path is proposed along the length of the rail corridor. A Class III bicycle path is also proposed along Wilson Street. The downtown SMART station on Wilson Street can be accessed from the West End Neighborhood by crossing the rail corridor and traveling south along Wilson Street to Fifth Street.

The Downtown Station Area Specific Plan envisions that the Seventh Street / A Street / Sixth Street corridor will replace the Seventh Street / A Street / Ninth Street corridor as the primary connecting route between the east and west sides of Highway 101 in the northern downtown area (Santa Rosa 2007).

W. Eighth Street is designated as an existing Pedestrian Connector in the Downtown Station Area Specific Plan. The Plan characterizes Pedestrian Connectors as corridors that carry automobile traffic, but that are key routes within and across neighborhoods for non-vehicular circulation (Santa Rosa 2007).

Existing Traffic Conditions

Existing traffic conditions were identified along local roadways that would be directly affected by the Project. As part of a traffic impact study prepared for the Project (see Appendix G), the following six intersections were analyzed for potential impacts related to re-distributed traffic from a rail crossing closure. The location of the selected intersections is shown on Figure 3.12-1 (Intersection Locations and Bicycle Routes).

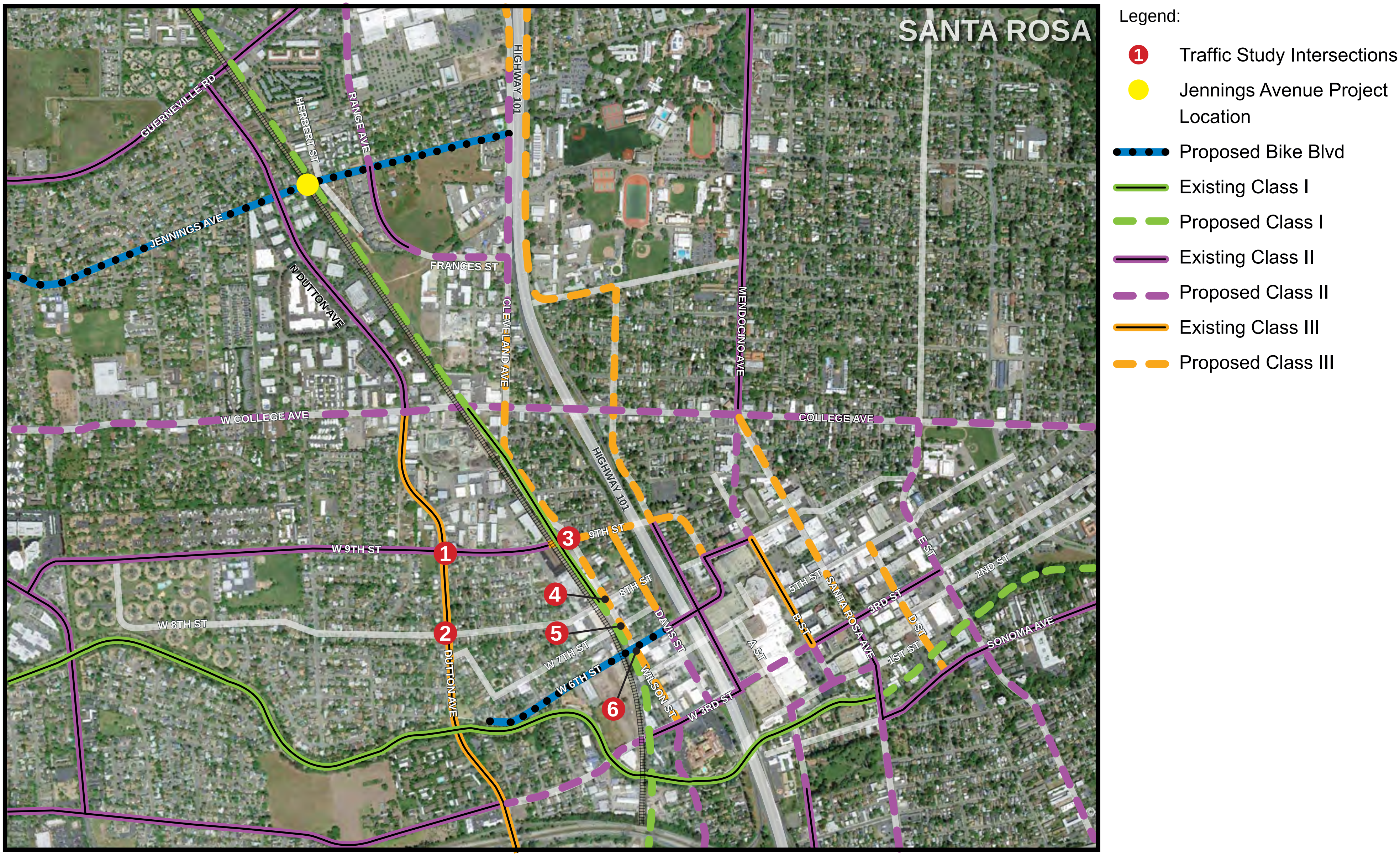
1. W. Ninth Street / N. Dutton Avenue
2. W. Eighth Street / N. Dutton Avenue
3. W. Ninth Street / Wilson Street
4. W. Eighth Street / Wilson Street
5. W. Seventh Street / Wilson Street
6. W. Sixth Street / Wilson Street

No intersections near the Jennings Avenue Project area were evaluated because the Project would not increase vehicular trips in that area and would likely decrease trips. For an evaluation of impacts if the Project were not implemented, i.e., the No Project Alternative, please refer to Chapter 4, Alternatives Description and Analysis.

Traffic counts for the above-mentioned intersections were collected on October 10, 2013, during a typical weekday when school was in session. Counts were collected during the following peak hour scenarios: morning, midday, school dismissal, and evening peak hours. These periods were chosen in order to demonstrate a comprehensive analysis of the study area and to quantitatively identify when the peak use typically occurs.

The weekday morning peak hour is defined as the hour with the highest traffic volume between 7:00 to 9:00 a.m. The weekday midday peak hour is defined as the hour with the highest traffic volume between 11:00 a.m. to 1:00 p.m. The weekday school dismissal peak hour is defined as the hour with the highest traffic volume between 1:30 p.m. to 3:30 p.m. The weekday evening peak hour is defined as the hour with the highest traffic volume between 4:00 to 6:00 p.m.

The existing level of service (LOS) calculations for the study intersections are summarized in Table 3.12-1 (Summary of Existing Peak Hour Intersection Level of Service Calculations). Please refer to Section 3.12.5 (Methodology) for a summary of LOS. Based on the analysis of existing traffic volumes, all of the study area intersections are operating at LOS C or better during all of the analysed peak periods. The LOS calculations for signalized intersections are based on an average delay per vehicle in seconds. The LOS calculations for unsignalized intersections are based on estimating the level of average delay in seconds per vehicle for each movement.



N

City of Santa Rosa
Jennings Avenue Pedestrian and Bicycle Rail Crossing EIR

Job Number	8410868
Revision	
Date	Oct 2014

Intersection Locations and Bicycle Routes

Figure 3.12-1

2235 Mercury Way Suite 150 Santa Rosa California 95407 USA T 1 707 523 1010 F 1 707 527 8679 W www.ghd.com

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Table 3.12-1 Summary of Existing Peak Hour Intersection Level of Service Calculations

Intersection	Existing Conditions			
	A.M. Peak	Midday Peak	School Dismissal Peak	P.M. Peak
	Delay/LOS	Delay/LOS	Delay/LOS	Delay/LOS
1. West Ninth Street/North Dutton Avenue	9.9/A	8.8/A	9.5/A	9.4/A
2. West Eighth Street/North Dutton Avenue				
Eastbound Approach	*11.0/B*	*10.8/B*	*11.1/B*	*12.7/B*
Westbound Approach	*17.5/C*	*12.6/B*	*14.8/B*	*16.4/C*
Northbound Left Turn	8.3/A	8.8/A	8.7/A	9.8/A
Southbound Left Turn	9.4/A	8.4/A	8.6/A	9.8/A
3. West Ninth Street/Wilson Street	10.4/B	9.5/A	11.0/B	14.6/B
4. West Eighth Street/Wilson Street				
Eastbound Approach	*10.7/B*	*10.8/B*	*11.3/B*	*12.3/B*
Westbound Approach	*10.0/B*	*11.0/B*	*10.8/B*	*12.2/B*
Northbound Left Turn	0.9/A	1.0/A	1.0/A	0.8/A
Southbound Left Turn	0.1/A	0.4/A	0.2/A	0.2/A
5. West Seventh Street/Wilson Street				
Eastbound Approach	*10.3/B*	*10.8/B*	*11.9/B*	*14.4/B*
Westbound Approach	*11.0/B*	*11.7/B*	*10.9/B*	*12.0/B*
Northbound Left Turn	1.1/A	1.7/A	1.7/A	2.0/A
Southbound Left Turn	0.2/A	0.5/A	0.2/A	0.2/A
6. West Sixth Street/Wilson Street	8.5/A	9.1/A	9.5/A	11.9/B

Notes: *Italics* = results for minor movements at unsignalized intersections
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

Existing Bicycle and Pedestrian Use

On October 10, 2013, pedestrian and bicycle counts were field collected at the intersection of Wilson Street with W. Sixth Street, W. Seventh Street, and W. Eighth Street, as well as at the existing rail crossing at Jennings Avenue (see Appendix G). Pedestrian and bicycle counts were performed during the peak traffic periods, and the type of pedestrian trips were noted, including grade school related trips, secondary school/college related trips, recreational related trips, and commuter related trips.

Pedestrian and bicycle counts at Jennings Avenue and the rail corridor were collected over a period of eight hours, including morning (7:00 a.m. – 9:00 a.m.), midday (11:00 a.m. – 1:00 p.m.), afterschool (1:30 p.m. – 3:30 p.m.), and evening periods (4:00 p.m. – 6:00 p.m.). A total of 25 bicyclists and 91 pedestrians used the crossing over the observed periods. Ninety percent or more of the bicyclists were categorized as recreational users. Of the pedestrians, approximately 30 percent were characterized as school related trips.

On October 10, 2013, pedestrian and bicycle counts were also collected at W. Sixth, W. Seventh, and W. Eighth Street and the SMART rail corridor over a period of eight hours. At W. Sixth Street, 153 bicyclists and 508 pedestrians were observed using the crossing. At W. Seventh Street, 165 bicyclists and 329 pedestrians were observed using crossing. And at W. Eighth Street, 154 bicyclists and 185 pedestrians were observed using the crossing. Approximately eighty percent or more of the bicyclists and pedestrians using the crossings at W. Sixth, W. Seventh, and W. Eighth streets were characterized as recreational users.

3.12.3 Regulatory Framework

State

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates railroads and rail transit in the State of California. CPUC General Order No. 75-D provides regulations governing standards for warning devices for at-grade rail crossings in the State of California, including flashing light signal assemblies, exit gates, warning signs, gate arms, and other devices. As part of its mission to reduce hazards associated with at-grade crossings, and in support of the national goal of the FRA, CPUC's policy is to reduce the number of at-grade crossings on freight or passenger railroad mainlines in California. CPUC General Order No. 26-D provides regulations governing clearance requirements for railroads.

City of Santa Rosa General Plan Goals and Policies

The following are the goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.

T-D **Maintain acceptable motor vehicle traffic flows.**

T-D-1 Maintain a Level of Service (LOS) D or better along all major corridors. Exceptions to meeting the standard include:

- Within downtown;
- Where attainment would result in significant environmental degradation;
- Where topography or environmental impact makes the improvement impossible;
- Where attainment would ensure loss of an area's unique character.

The LOS is to be calculated using the average traffic demand over the highest 60-minute period.

T-D-2 Monitor LOS at intersections to assure that improvements or alterations to improve corridor LOS do not cause severe impacts at any single intersection.

T-D-3 Require traffic studies for development projects that may have a substantial impact on the circulation system.

T-H **Expand the existing transit network to reduce greenhouse gas emissions and to provide convenient and efficient public transportation to workplaces, shopping, SMART stations, and other destinations.**

T-H-1 Provide convenient, efficient routes to major employment centers throughout the city.

T-J **Provide attractive and safe streets for pedestrians and bicyclists.**

T-J-1 Pursue implementation of walking and bicycling facilities as envisioned in the city's Bicycle and Pedestrian Master Plan.

T-J-5 Support Safe Routes to School by pursuing available grants for this program and ensuring that approaches to schools are safe for cyclists and pedestrians by providing needed amenities such as sidewalks, crosswalks, bike lanes, and traffic calming on streets near schools.

T-K **Develop a safe, convenient, and continuous network of pedestrian sidewalks and pathways that link neighborhoods with schools, parks, shopping areas, and employment centers.**

T-K-1 Link the various citywide pedestrian paths, including street sidewalks, downtown walkways, pedestrian areas in shopping centers and work complexes, park pathways, and other creekside and open space pathways.

T-K-5 Ensure provision of safe pedestrian access for students of new and existing school sites throughout the city.

T-K-6 Integrate multi-use paths into all creek corridors, railroad rights-of-way, and park designs.

T-L **Develop a citywide system of designated bikeways that serves both experienced and casual bicyclists, and which maximizes bicycle use for commuting, recreation, and local transport.**

T-L-1 Provide bicycle lanes along all regional/arterial streets and high volume transitional/collector streets.

T-L-2 Provide bicycle lanes on major access routes to all schools and parks.

T-L-3 Improve bicycle networks by finishing incomplete or disconnected bicycle routes.

T-L-4 Maintain all roadways and bicycle-related facilities so they provide safe and comfortable conditions for bicyclists.

T-L-5 Consider bicycle operating characteristics and safety needs in the design for roadways, intersections, and traffic control systems.

T-L-6 Promote and facilitate the use of bicycles with other transportation modes.

North Santa Rosa Station Area Specific Plan Goals and Policies

The following are the goals and policies from the *North Santa Rosa Station Area Specific Plan* that are applicable to the Project.

C-3 **Provide multimodal connections throughout the Project Area.**

C-3.4 Establish Jennings Avenue as a bike boulevard by constructing the necessary improvements to minimize stops, including signs and markings to identify it as a

shared roadway with bicycles and vehicles, and by enhancing crossing amenities where appropriate.

C-5 **Complete specific roadway improvements in the Project Area to enhance safety and comfort for pedestrians and bicyclists.**

C-5.6 Implement a bicycle boulevard along the length of Jennings Avenue by minimizing the number of stops required of bicyclists traveling along the corridor while also maintaining low vehicular speeds.

C-5.8 Establish a pedestrian/bicycle crossing of the SMART rail corridor to link the eastern and western segments of Jennings Avenue.

C-7 **Establish a network of multiuse paths for pedestrians and bicyclists throughout the Project Area.**

C-7.2 Establish connections between linear multi-use paths along creeks and the overall pedestrian/bicycle network.

PF-9 **Provide fire and police services that ensure the safety of the Plan Area community.**

PF-9.2 Require new development along the SMART rail corridor to comply with fire department requirements for equipment access and circulation.

Downtown Santa Rosa Station Area Specific Plan Goals and Policies

The following are the goals and policies from the *Downtown Santa Rosa Station Area Specific Plan* that are applicable to the Project.

SP-T-1 **Ensure new development provides adequate vehicular circulation improvements.**

SP-T-1.3 Discourage “cut-through” traffic in the West End neighborhood by restricting turning movements onto West Sixth Street from the SMART property to right turns only.

SP-T-2 **Promote a user-friendly interface between all transit agencies serving the Plan Area.**

SP-T-2.1 Coordinate with SMART and bus transit providers to ensure that development of the SMART site provides short- and/or long-term facilities for accommodating bus and shuttle transfers between rail and transit. Transit facilities should be located within a visual line-of-site of the rail station platform and connected by a clearly identifiable path.

SP-T-2.2 Work with SMART and major employers to establish shuttle service between the commuter rail station site and area employment centers and business parks.

SP-T-3 **Ensure new development and streetscape projects provide pedestrian and bicycle circulation improvements.**

SP-T-3.1 Coordinate with SMART to implement the regional pedestrian/bicycle trail along the rail right-of-way.

SP-T-3.4 Within the Specific Plan Area, give priority to pedestrian and bicycle improvements in the Railroad Square and Railroad Corridor Sub-Areas to

promote use of these travel modes by those living or working in closest proximity to the station site.

SP-T-3.5 Work with SMART and the Public Utilities Commission to develop attractive fencing and landscaping treatments along the railroad right-of-way. Low-level open fencing should be encouraged.

SP-UPS-7 Provide fire and police services that ensure the safety of the Plan Area community.

SP-UPS-7.3 Require new development along the SMART rail corridor to comply with Fire Department requirements for equipment access and circulation.

Santa Rosa Bicycle and Pedestrian Master Plan 2010 Goals and Policies

The following are the goals and policies from the *Santa Rosa Bicycle and Pedestrian Master Plan* that are applicable to the Project.

1 Integrate the consideration of bicycle and pedestrian travel into City planning activities and capital improvement projects, and coordinate with other agencies to improve pedestrian and bicycle facilities and access within and connecting to Santa Rosa.

1.2 Integrate pedestrian and bicycle network and facility needs as appropriate into all planning, and regulatory documents, street capital improvement projects, including traffic impact studies and analyses of proposed street changes.

2 Develop a safe, convenient, and continuous network of pedestrian and bicycle facilities that serves the community and links neighborhoods with schools, parks, shopping, and employment centers.

2.1 Develop a citywide system of designated bikeways that serve bicyclists of all skill levels and which maximizes bicycle use for commuting, local transportation, and recreation.

2.3 Provide sidewalks or pathways and bikeways on major access routes to all schools and parks.

2.6 Ensure that pedestrian and bicycle circulation is an integral part of street design so that lanes and pathways form an integrated network and address the "Complete Streets" concept in transportation planning.

2.7 Consider pedestrian and bicycle operating characteristics in the design, and/or retrofitting of turning movements, intersections and traffic control systems, including analysis of pedestrian and bicycle counts and collisions.

3.12.4 Evaluation Criteria and Significance Thresholds

For the purposes of this EIR, the evaluation criteria and significance thresholds summarized in Table 3.12-2 (Evaluation Criteria and Significance Thresholds) are used to determine if the Project would have a significant effect on transportation.

Table 3.12-2 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
TR-1: Would the Project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the vehicular circulation system?	More than 0 conflicts. Creation of traffic safety hazards during construction. Limit access of delivery vehicles to an established business.	CEQA Guidelines Appendix G, Checklist Item VIII (a) General Plan Policies: T-D-1, T-H-1 Downtown Station Area Specific Plan Policy: SP-T-1.3.
TR-2: Would the Project substantially increase hazards due to a design feature or incompatible uses?	Non-compliance with Americans with Disabilities Act and applicable rail crossing regulations.	CEQA Guidelines Appendix G, Checklist Item VIII (d) Americans with Disabilities Act CPUC General Order No. 75-D CPUC General Order No. 26-D
TR-3: Would the Project result in inadequate emergency access?	Limit access to driveways and land uses adjacent to construction area. Non-compliance with Fire Department requirements for equipment access. Limit ability for emergency services to meet response time goals.	CEQA Guidelines Appendix G, Checklist Item VIII (e) North Santa Rosa Station Area Specific Plan Policy PF-9.2 Downtown Station Area Specific Plan Policy SP-UPS-7.3
TR-4: Would the Project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	More than 0 conflicts. Re-routing resulting in an additional trip length exceeding half a mile or 15 minutes.	CEQA Guidelines Appendix G, Checklist Item VIII (a)(f) General Plan Policies T-H-1, T-J-1, T-J-5, T-K-1, T-K-5 North Santa Rosa Station Area Specific Plan Policies C-3.4, C-5.8, C-7.2 Downtown Station Area Specific Plan Policies SP-T-3.1, SP-T-3.4 Santa Rosa Bicycle and Pedestrian Master Plan Policy 1.2, 2.3

Areas of No Project Impact

As explained below, construction of the Project would not result in impacts related to two of the traffic checklist questions identified in Appendix G of the current CEQA Guidelines. The following questions are not discussed further in the impact analysis, for the following reasons:

- ***Would the Project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?***

  Project construction and operation is not located within an airport land use plan or within two miles of a public or private airport. Project construction and operation would include only ground-based travel. The Project is not growth inducing; therefore, Project construction and operation would have no impact with respect to air traffic levels. Construction and operation of the Project would not involve construction of structures tall enough that could result in safety risks to air traffic patterns. Therefore, the significance criterion related to a change in air traffic patterns is not applicable to the Project and is not discussed further.

- ***Would the Project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?***

  The Sonoma County Transportation Authority (SCTA) is designated as the Congestion Management Agency for Sonoma County; however Sonoma County does not have an adopted Congestion Management Program. Therefore, no conflict with an applicable congestion management program would occur. Therefore, the significance criterion related to a conflict with an applicable congestion management program is not applicable to the proposed Project and is not discussed further.

3.12.5 Methodology

Methodologies used in this section are explained in more detail in Appendix G, Traffic Impact Analysis Report.

Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. The LOS designation for intersections is generally accompanied by a unit of measure which indicates a level of delay.

A traffic impact study prepared for the Project provides an evaluation of operating conditions for select intersections during weekday peak periods, including weekday morning, midday, school dismissal, and evening peak period scenarios (see Appendix G). The traffic study analyzed existing conditions, existing conditions plus the Project, cumulative conditions, and cumulative conditions plus the Project. Cumulative conditions analyzed represent the traffic based on the buildout of the City of Santa Rosa General Plan. In addition to vehicular analysis, the traffic impact study provides an evaluation of Project impacts upon pedestrian and bicycle movements, public transit routes, and business related truck and delivery routes within the area near W. Sixth, W. Seventh, and W. Eighth Street.

Analysis of the potential rail crossing closure at either W. Sixth Street, W. Seventh Street, or W. Eighth Street represents an evaluation of re-distributed traffic through the existing roadway

network. For purposes of this analysis, re-distributed trips are addressed as "project-generated" trips. The re-distribution of traffic was performed based on the following assumptions:

- **Re-distribution of W. Sixth Street Traffic**: For closure of a rail crossing at W. Sixth Street, traffic was assumed to be re-routed northward to the rail crossing at W. Seventh Street. Those movements entering or exiting the west leg of the intersection of W. Sixth Street and Wilson Street in the Existing Condition were assumed to make similar movements at the intersection of W. Seventh Street and Wilson Street. This represents a conservative, worst-case scenario in which all of the traffic that reaches Wilson Street has no prior knowledge of the closure.
- **Re-distribution of W. Seventh Street Traffic**: For closure of a rail crossing at W. Seventh Street, traffic was assumed to be re-routed southward to the rail crossing at W. Sixth Street. Those movements entering or exiting the west leg of the intersection of W. Seventh Street and Wilson Street in the Existing Condition were assumed to make similar movements at the intersection of W. Sixth Street and Wilson Street. This represents a conservative, worst-case scenario in which all of the traffic that reaches Wilson Street has no prior knowledge of the closure.
- **Re-distribution of W. Eighth Street Traffic**: For closure of a rail crossing at W. Eighth Street, traffic was assumed to be re-routed northward to the rail crossing at W. Ninth Street and Wilson Street. Those movements entering or exiting the west leg of the intersection of W. Eighth Street and Wilson Street in the Existing Condition were assumed to make similar movements at the intersection of West Ninth Street and Wilson Street. Like the other options, this represents a conservative, worst-case scenario in which all of the traffic that reaches Wilson Street has no prior knowledge of the closure.

The study intersections were analyzed using methodologies from the Highway Capacity Manual 2000. Signalized intersections were analyzed based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds was used as the basis for evaluation in this LOS methodology. The LOS for unsignalized intersections was analyzed using the unsignalized intersection capacity method. For side street stop controls, the method determines a LOS for each minor turning movement by estimating the level of average delay in seconds per vehicle. The movement with the highest level of delay is presented as the worst case LOS.

Truck Circulation

An evaluation of potential impacts of a rail crossing closure at W. Sixth Street, W. Seventh Street, or W. Eighth Street on the accessibility of delivery vehicles to Western Farm Center and Franco American Bakery was performed. It is expected that other establishments within the area utilize delivery trucks with less drastic turning maneuvers than those associated with Western Farm Center and Franco American Bakery. Therefore, the circulation impacts of other businesses within the study area are represented within the discussion of impacts to Western Farm Center and Franco American Bakery.

Hazardous Design and Emergency Access

The Project is evaluated for consistency with applicable rail crossing regulations and Fire Department requirements. The potential for construction activities to limit emergency access is

considered, as is the distance of a probable re-route between a rail crossing closure site and the closest fire station.

Bicycle and Pedestrian Facilities

The Project is evaluated for consistency with adopted plans and policies regarding bicycle and pedestrian facilities. In addition, re-routing of pedestrian and bicycle facilities is evaluated to determine the additional trip length in distance and time. While the City of Santa Rosa has not adopted quantitative thresholds of significance for pedestrian or bicycle impacts, for the purpose of analysis, significance thresholds were developed based on commonly-accepted maximum recommended safe walking distances to schools and professional judgment. The maximum safe walking distance to elementary schools is conventionally known to be 0.5 mile, or approximately 15 minutes of walking time. With distances beyond this threshold, grade school-related walking trips would be expected to switch to use of a motor vehicle.

3.12.6 Impacts and Mitigation Measures

Table 3.12-3 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.	
TR-1: Would the Project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the vehicular circulation system?	LSM	LSM	LSM	LSM
TR-2: Would the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	LS	LS	LS	LS
TR-3: Would the Project result in inadequate emergency access?	LSM	LSM	LSM	LSM
TR-4: Would the Project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	LSM	LS	SU	NI
TR-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to transportation?	LSM	LSM	LSM	LSM

Notes: LS = Less than Significant
LSM = Less than Significant with Mitigation
SU = Significant and Unavoidable

Impact: **TR-1: Would the Project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the vehicular circulation system?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Rail Overcrossing Alternative (Significant)

Construction

LOS standards are intended to regulate long-term impacts from operation of future projects as opposed to temporary impacts from construction. Therefore, a qualitative analysis of potential construction related impacts on motor vehicle traffic flows follows.

Construction traffic associated with the Preferred Project and the Rail Overcrossing Alternative would result in a short-term increase in construction-related vehicle trips on Guerneville Road, N. Dutton Avenue, Range Avenue, and Jennings Avenue. Access to the W. Sixth, W. Seventh, or W. Eighth Street would also occur under the Preferred Project for closure of a rail crossing, which would result in short-term increases in construction-related vehicle trips along W. Third Street, Wilson Street, and Davis Street, although other surrounding roadways could also be used, including N. Dutton Avenue, W. Ninth Street, and Donahue Street.

Construction would result in vehicle trips by construction workers, haul-truck trips for disposal of demolition debris, and material and equipment deliveries to the crossing closure site. The number of construction-related vehicles traveling to and from the site would vary on a daily basis; however, the heaviest traffic days would occur when demolition debris is hauled off-site for disposal. As identified in Chapter 2, Project Description, it is anticipated that up to 20 vehicle round trips could occur on a given day during construction of an at-grade rail crossing at Jennings Avenue, and that up to 16 vehicle round trips could occur during closure of a rail crossing. For the Rail Overcrossing Alternative, it is anticipated that up to 40 vehicle round trips could occur on a given day during construction of a rail overcrossing at Jennings Avenue. Construction-related traffic would be temporary, would vary on a daily basis, and would be spread out over the course of a work day. Therefore, roadway segments in the vicinity of the construction sites would have sufficient capacity to accommodate the temporary increase in construction traffic, and the impact would be less than significant.

Construction of the Preferred Project and the Rail Overcrossing Alternative would require partial lane closures along Jennings Avenue, as well as either W. Sixth Street, W. Seventh Street, or W. Eighth Street. Staging areas for construction equipment, vehicles, and supplies would be established on either side of the rail corridor within the City's right-of-way. The staging areas and work sites would be enclosed with a chain link fence during construction to prevent pedestrian access across the rail corridor. The proposed construction within the right-of-way may result in an increase in traffic safety hazards for vehicles sharing the road with construction vehicles, including the potential confusion of drivers where traffic is re-routed to other streets or into adjacent travel lanes. In addition, construction may temporarily increase the potential for unauthorized access of pedestrians

across the rail corridor. The impact for both the Preferred Project and the Rail Overcrossing Alternative would therefore be significant.

Operation

Roadway Level of Service

Per Policy T-D-1 of the Santa Rosa General Plan, the LOS threshold in the City of Santa Rosa is LOS D or better along all major corridors. Exceptions to the City's LOS D standard include intersections and corridors within the downtown area of the City. The downtown area, as defined by the General Plan, includes the intersections of Wilson Street with W. Sixth Street, W. Seventh Street, W. Eighth Street, and W. Ninth Street.

The rail crossing at Jennings Avenue under the Preferred Project and the Rail Overcrossing Alternative would implement Policy C-5.8 of the North Station Area Specific Plan by establishing a pedestrian and bicycle crossing of the rail corridor to link the eastern and western segments of Jennings Avenue. The rail crossing is not intended for automobile traffic, and would not generate any additional vehicular trips to the Jennings Avenue Project area. Therefore, an at-grade or rail overcrossing at Jennings Avenue would have no vehicular traffic impact.

For the Preferred Project, the impact of re-distributed traffic on local roadways due to closure of a rail crossing at either W. Sixth Street, W. Seventh Street, or W. Eighth Street was quantitatively assessed using LOS calculations. For a rail crossing closure at W. Sixth Street, existing peak hour traffic identified at the intersection of W. Sixth Street and Wilson Street was conservatively assumed to be re-routed entirely to the rail crossing at W. Seventh Street. For a rail crossing closure at W. Seventh Street, existing peak hour traffic at the intersection of W. Seventh Street and Wilson Street was assumed to be re-routed entirely to the rail crossing at W. Sixth Street. And for a rail crossing closure at W. Eighth Street, existing peak hour traffic at the intersection of W. Eighth Street and Wilson Street was assumed to be re-routed to W. Ninth Street and Wilson, and W. Ninth Street and N. Dutton Avenue.

The LOS calculations of surrounding intersections for closure of a rail crossing at either W. Sixth Street, W. Seventh Street, or W. Eighth Street are summarized in Table 3.12-4 (Summary of Preferred Project Peak Hour Level of Service Calculations).

For closure of a rail crossing at W. Sixth Street, re-distribution of peak hour traffic volumes to W. Seventh Street would lower the LOS for the eastbound movement at W. Seventh Street and Wilson Street from LOS B in the existing condition to LOS C in the School Dismissal peak hour, and to LOS D in the P.M. peak hour. All other movements within the study intersections are expected to continue operating at the same LOS as under existing conditions. Although the LOS for the eastbound movements of W. Seventh Street and Wilson would be reduced from existing conditions during the School Dismissal peak hour and the P.M. peak hour, the intersection would continue to operate satisfactorily in accordance with the City's LOS standards. Therefore, the vehicular traffic impact from closure of a rail crossing at W. Sixth Street would be less than significant.

Table 3.12-4 Summary of Preferred Project Peak Hour Level of Service Calculations

Intersection	A.M. Peak				Midday Peak				School Dismissal Peak				P.M. Peak			
	Existing	W. 6th Closure	W. 7th Closure	W. 8th Closure	Existing	W. 6th Closure	W. 7th Closure	W. 8th Closure	Existing	W. 6th Closure	W. 7th Closure	W. 8th Closure	Existing	W. 6th Closure	W. 7th Closure	W. 8th Closure
	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS
1. W. 9th St./N. Dutton	9.9/A	9.9/A	9.9/A	9.9/A	8.8/A	8.8/A	8.8/A	8.8/A	9.5/A	9.5/A	9.5/A	9.5/A	9.4/A	9.4/A	9.4/A	9.4/A
2. W. 8th St./N. Dutton																
Eastbound Approach	*11.0/B*	*11.0/B*	*11.0/B*	*11.0/B*	*10.8/B*	*10.8/B*	*10.8/B*	*10.8/B*	*11.1/B*	*11.1/B*	*11.1/B*	*11.1/B*	*12.7/B*	*12.7/B*	*12.7/B*	*12.7/B*
Westbound Approach	*17.5/C*	*17.5/C*	*17.5/C*	*17.1/C*	*12.6/B*	*12.6/B*	*12.6/B*	*13.1/B*	*14.8/B*	*14.8/B*	*14.8/B*	*14.8/B*	*16.4/C*	*16.4/C*	*16.4/C*	*17.6/C*
Northbound Left Turn	8.3/A	8.3/A	8.3/A	8.3/A	8.8/A	8.8/A	8.8/A	8.8/A	8.7/A	8.7/A	8.7/A	8.7/A	9.8/A	9.8/A	9.8/A	9.8/A
Southbound Left Turn	9.4/A	9.4/A	9.4/A	9.4/A	8.4/A	8.4/A	8.4/A	8.4/A	8.6/A	8.6/A	8.6/A	8.6/A	9.8/A	9.8/A	9.8/A	9.8/A
3. W. 9th St./Wilson St.	10.4/B	10.4/B	10.4/B	10.8/B	9.5/A	9.5/A	9.5/A	9.9/A	11.0/B	11.0/B	11.0/B	11.6/B	14.6/B	14.6/B	14.6/B	16.4/C
4. W. 8th St./Wilson St.																
Eastbound Approach	*10.7/B*	*10.7/B*	*10.7/B*	*10.7/B*	*10.8/B*	*10.8/B*	*10.8/B*	*9.1/A*	*11.3/B*	*11.3/B*	*11.3/B*	*11.9/B*	*12.3/B*	*12.3/B*	*12.3/B*	*0.0/A*
Westbound Approach	*10.0/B*	*10.0/B*	*10.0/B*	*9.7/B*	*11.0/B*	*11.0/B*	*11.0/B*	*10.2/B*	*10.8/B*	*10.8/B*	*10.8/B*	*10.1/B*	*12.2/B*	*12.2/B*	*12.2/B*	*11.3/B*
Northbound Left Turn	0.9/A	0.9/A	0.9/A	0.0/A	1.0/A	1.0/A	1.0/A	0.1/A	1.0/A	1.0/A	1.0/A	0.0/A	0.8/A	0.8/A	0.8/A	0.0/A
Southbound Left Turn	0.1/A	0.1/A	0.1/A	0.1/A	0.4/A	0.4/A	0.4/A	0.4/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A
5. W. 7th St./Wilson St.																
Eastbound Approach	*10.3/B*	*11.7/B*	*0.0/A*	*10.3/B*	*10.8/B*	*12.8/B*	*0.0/A*	*10.8/B*	*11.9/B*	*15.5/C*	*0.0/A*	*11.9/B*	*14.4/B*	*28.0/D*	*0.0/A*	*14.4/B*
Westbound Approach	*11.0/B*	*12.0/B*	*10.4/B*	*11.0/B*	*11.7/B*	*13.5/B*	*10.6/B*	*11.7/B*	*10.9/B*	*12.6/B*	*10.2/B*	*10.9/B*	*12.0/B*	*14.2/B*	*11.3/B*	*12.0/B*
Northbound Left Turn	1.1/A	2.0/A	0.0/A	1.1/A	1.7/A	3.1/A	0.0/A	1.7/A	1.7/A	3.5/A	0.0/A	1.7/A	2.0/A	4.4/A	0.0/A	2.0/A
Southbound Left Turn	0.2/A	0.2/A	0.2/A	0.2/A	0.5/A	0.5/A	0.5/A	0.5/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A
6. W. 6th St./Wilson St.	8.5/A	8.4/A	8.8/A	8.5/A	9.1/A	9.0/A	9.9/A	9.1/A	9.5/A	9.2/A	10.4/B	9.5/A	11.9/B	11.3/B	14.9/B	11.9/B

Notes: *Italics* = results for minor movements at unsignalized intersections
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

For closure of a rail crossing at W. Seventh Street, re-distribution of peak hour traffic volumes to W. Sixth Street would lower the LOS at the intersection of W. Sixth Street and Wilson Street from LOS A in the existing condition to LOS B in the School Dismissal peak hour. The change represents an increase of less than one second of average control delay. All other movements within the study intersections are expected to continue operating at the same LOS as under existing conditions. Although the LOS for the intersection of W. Sixth Street and Wilson would be reduced from existing conditions during the School Dismissal peak hour, the intersection would continue to operate satisfactorily in accordance with the City's LOS standards. Therefore, the vehicular traffic impact from closure of a rail crossing at W. Seventh Street would be less than significant.

For closure of a rail crossing at W. Eighth Street, re-distribution of peak hour traffic volumes to W. Ninth Street would lower the LOS at the intersection of W. Ninth Street and Wilson Street from LOS B in the existing condition to LOS C in the P.M. peak hour. The change represents an increase of less than two seconds of average control delay. All other movements within the study intersections are expected to continue operating at the same levels of service as under existing conditions. Although the LOS for the intersection of W. Ninth Street and Wilson would be reduced from existing conditions during the P.M. peak hour, the intersection would continue to operate satisfactorily in accordance with local LOS standards. Therefore, the vehicular traffic impact from closure of a rail crossing at W. Eighth Street would be less than significant.

Closure of a rail crossing may also disperse traffic onto smaller streets within the West End neighbourhood. Traffic volumes on these smaller streets are substantially less than at the intersections studied, and therefore increased trips on these smaller streets would not result in a LOS in conflict with the City's standards, since the more congested study intersections did not result in a LOS in conflict with the City's standard. For example, the adjacent intersections of Adams Street with W. Sixth and W. Seventh Streets were observed during the P.M. peak period and traffic volumes were found to be roughly 25 percent of the study intersection volume. Along W. Ninth Street, the intersection at Donahue Street had roughly 50 percent of the volume observed during the P.M. peak hour at W. Ninth Street and Wilson Street. Therefore, the vehicular traffic impact from closure of a rail crossing at both the study intersections and smaller streets throughout the West End neighbourhood would be less than significant.

Truck Circulation

In addition to the vehicular analysis summarized above, business-related truck and delivery routes within the West End neighborhood were evaluated relative to closure of a rail crossing at either W. Sixth Street, W. Seventh Street, or W. Eighth Street.

A variety of trucks currently provide deliveries to local businesses in the West End Neighborhood. The largest delivery vehicles are associated with the Western Farm Center and the Franco American Bakery. Other delivery or service vehicles for local establishments are expected to be smaller or more maneuverable within the circulation network of the area.

Through discussions with both businesses, it is understood that the largest trucks utilized at the Western Farm Center are single and double tractor-trailers with a length of 67 feet, and the largest trucks utilized at Franco American Bakery are tractor-trailers with a length of 65 feet.

The trucks currently access the Western Farm Center from W. Seventh Street, W. Eighth Street, and Donahue Street, and utilize the internal parking lots at the store for loading and unloading of goods. The trucks currently access Franco American Bakery from W. Sixth Street, W. Seventh Street, and Madison Street, utilizing the frontage of the site for unloading.

Closure of a rail crossing at either W. Sixth Street or W. Seventh Street would be expected to limit access of larger design vehicles such as those making deliveries to Western Farm Center and Franco American Bakery (i.e., with a length of 65 feet or more). The impact is considered significant.

Closure of a rail crossing at W. Eighth Street would require trucks accessing Western Farm Center to use W. Ninth Street and Donahue Street or W. Seventh Street as an alternate route. Because alternate routes exist, circulation would not be significantly limited with the closure, and the impact would be less than significant.

Mitigation: **Mitigation Measure TR-1: Traffic Control Plan *(Preferred Project and Rail Overcrossing Alternative)***

The City shall require the construction contractor to prepare and implement an approved traffic control plan for the proposed construction activities. The plan shall include measures that address work that would block the public right-of-way, and shall include plans for re-routing of vehicles, bicycles and pedestrians. The traffic control plan shall include, but not necessarily be limited to, the following measures as applicable to site-specific conditions:

Traffic Controls

- Circulation and detour plans shall be developed to minimize impacts on local street circulation. Haul routes that minimize truck traffic on local roadways and residential streets shall be utilized to the extent feasible. Flaggers and/or signage shall be used to guide vehicles through and/or around the construction zone.
- Truck routes shall be identified in the traffic control plan and shall be utilized to the extent feasible to minimize truck traffic on local roadways and residential streets that are not identified locally as designated haul routes.
- Lane closures at Jennings Avenue shall be limited during peak hours to the extent feasible. In addition, outside of allowed working hours, or when work is not in progress, Jennings Avenue shall be restored to normal operations, with all trenches covered with steel plates.
- Detours shall be included for bicycles and pedestrians in all areas potentially affected by Project construction. Notices shall be provided to advise bicyclists and pedestrians of any temporary detours around construction zones.

- The traffic control plan shall also conform to applicable provisions of the State's Manual of Traffic Controls for Construction and Maintenance Work Areas.

<u>Private and Emergency Access</u>

- Access to driveways and private roads shall be maintained, as feasible, by using steel trench plates. If access must be restricted for brief periods (more than one hour), property owners shall be notified by the City in advance of such closures.
- At locations where the main access to a nearby property is blocked, the contractor(s) shall be required to have ready at all times the means necessary to accommodate access by emergency vehicles to such properties, such as plating over excavations, short detours, and/or alternate routes.
- Construction shall be coordinated with facility owners or administrators of land uses that may be more significantly affected by traffic impacts, such as police and fire stations, transit providers, hospitals, ambulance providers, and schools. Emergency responders, and other more significantly affected facility owners and/or operators shall be notified by the City in advance of the timing, location, and duration of construction activities and the locations and durations of any temporary detours and/or lane closures.

Mitigation: **Mitigation Measure TR-2: Facilitate Truck Movement *(Preferred Project with Rail Crossing Closure at W. Sixth Street or W. Seventh Street)***

The City shall coordinate with local businesses to implement time-limited parking restrictions along Adams Street to provide for the circulation and access of oversized delivery trucks to Franco American Bakery. The parking restriction shall be applicable to the entirety of both sides of Adams Street, and shall be coordinated with anticipated delivery times.

In addition, in the event of a rail crossing closure at W. Seventh Street, the City shall remove parking along the south side of W. Sixth Street at Adams Street (one parking spot) and widen the south side of the roadway between Adams Street and the at-grade rail crossing within the City's right-of-way. The additional widening shall facilitate the southbound left-turn truck movement from Adams Street to W. Sixth Street around the existing center median island. As an alternative, the City shall remove the existing center median on W. Sixth Street and replace it with a westbound exit gate at the at-grade rail crossing.

Impacts of Mitigation Measure TR-2 – Widening of W. Sixth Street, demolition of the median at W. Sixth Street, and/or installation of an additional exit gate for the rail crossing at W. Sixth Street would be conducted within the construction area identified for the Preferred Project (see Figure 2-3 [Alternative Locations for Closure of One Rail Crossing]). The type of construction would be similar to that for the Preferred Project in this area, and therefore, the impacts of Mitigation Measure TR-2 would be similar to those identified for the Preferred Project relative to a rail crossing closure at W. Sixth Street.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Rail Overcrossing Alternative (Less than Significant with Mitigation)

Mitigation Measure TR-1 would require the City and its contractor to implement a traffic control plan to reduce potential impacts on traffic flows and safety hazards during construction activities. With implementation of this mitigation measure, the potential impact of increased traffic safety hazards for both the Preferred Project and the Rail Overcrossing would be reduced to a less-than-significant level.

Mitigation Measure TR-2 would require establishment of time-limited parking restrictions along Adams Street to accommodate periodic deliveries to Franco American Bakery. This mitigation measure would apply only to the Preferred Project with closure of a rail crossing at either W. Sixth Street or W. Seventh Street. With implementation of this mitigation measure, the potential impact on truck circulation for the Preferred Project would be less than significant.

Impact: **TR-2: Would the Project substantially increase hazards due to a design feature or incompatible uses?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Construction

This significance criterion is intended to address siting and design impacts and does not apply to temporary construction impacts. Therefore, this significance criterion is not applicable to Project construction activities and is only evaluated as it relates to long-term operational impacts.

Operation

The Preferred Project would establish a pedestrian and bicycle crossing of the rail corridor to link the eastern and western segments of Jennings Avenue. The at-grade crossing would be designed to eliminate existing hazards associated with pedestrian and bicycle safety at an unofficial crossing and, when SMART passenger service begins operating, the Project would provide an accessible route for non-motorized users.

The Preferred Project would provide a new at-grade rail crossing at Jennings Avenue. The CPUC has jurisdiction over the safety of rail crossings in California. The Rail Crossings Engineering Section of the CPUC reviews projects for the safe design of crossings and recommends safety measures, such as automatic warning devices, to mitigate hazards for at-grade crossing users. The Preferred Project would include safety devices in compliance with the CPUC General Order No. 75-D regulations for at-grade rail crossings, as well as the Caltrans Highway Design Manual path standards, California Manual of Uniform Traffic Control Devices, and the Federal Highway Administration Railroad-Highway Grade Crossing Handbook. Based on preliminary discussions with CPUC staff, warning devices for the at-grade rail crossing would include flashing light signal assemblies with automatic gate arms, warning signs, pedestrian gates, hand rails, and because the site consists of a double track, electronic signs to notify pedestrians if a second train is coming in close proximity to the first crossing. Warning devices would indicate when a train was approaching and would trigger gate arms to block pedestrian access. Exit swing gates would be provided to

allow pedestrians to exit the track, if the gate arms were activated while a pedestrian was crossing. Because the at-grade rail crossing at Jennings Avenue would be required to comply with regulations governing standard warning devices for such crossings, potential safety hazards would be less than significant. In addition, in accordance with the CPUC policy of reducing the number of at-grade rail crossings on freight or passenger railroad mainlines in California to reduce hazards associated with at-grade crossings, the Preferred Project would include closure of an existing vehicular/pedestrian/bicycle rail crossing at either W. Sixth Street, W. Seventh Street, or W. Eighth Street. Therefore, the Preferred Project would not result in a net increase in at-grade rail crossings.

Mitigation: No mitigation is needed.

Analysis: *Rail Overcrossing Alternative (Less than Significant)*

<u>Construction</u>

Similar to the Preferred Project, this significance criterion is intended to address siting and design impacts and does not apply to temporary construction impacts. Therefore, this significance criterion is not applicable to Project construction activities and is only evaluated as it relates to long-term operational impacts.

<u>Operation</u>

The Rail Overcrossing Alternative would also establish a pedestrian and bicycle crossing of the rail corridor to link the eastern and western segments of Jennings Avenue. The overcrossing would be designed to eliminate existing hazards associated with pedestrian and bicycle safety at an unofficial crossing and, when SMART passenger service begins operating, the Project would provide an accessible route for non-motorized users.

A rail overcrossing at Jennings Avenue would provide a pedestrian and bicycle pathway over the rail corridor using a bridge structure. The elevation difference would allow trains to travel through the grade-separated crossing at the same time as bicyclists and pedestrians were utilizing the overcrossing structure. The rail overcrossing would reduce potential public safety hazards to pedestrians and cyclists that would use the crossing because it would provide complete separation of the pedestrian/bicycle path and the rail corridor. Such separation would avoid the potential for fatalities and injuries that could result from collisions between train and bicyclists/pedestrians. A rail overcrossing at Jennings Avenue would be designed in compliance with the ADA and CPUC General Order No. 26-D regulations governing clearance requirements for railroads. The necessary overhead and side clearance would be provided for the rail overcrossing. Therefore, because the Rail Overcrossing Alternative would provide a grade-separated crossing and would be required to comply with regulations governing clearance requirements, potential safety hazards would be less than significant.

Based on the preliminary design of the rail overcrossing, a portion of Jennings Avenue on the west side of the rail corridor would be used to accommodate the ADA compliant ramps for the overcrossing. The rail overcrossing would require that the width of Jennings Avenue be reduced to 24 feet between Jennings Avenue and the rail corridor. Therefore, in order to ensure that this width

reduction does not cause a traffic hazard, on-street parking would be prohibited. Therefore, traffic hazards associated with the Rail Overcrossing Alternative would be less than significant.

Mitigation: No mitigation is needed.

Impact: TR-3: Would the Project result in inadequate emergency access?

Analysis: Preferred Project – At-grade Rail Crossing (Significant)

Construction

Construction of the Preferred Project would require partial lane closures along Jennings Avenue. Construction of the Preferred Project would also require a street closure at either W. Sixth Street, W. Seventh Street, or W. Eighth Street. Staging areas for construction equipment, vehicles, and supplies would be established on either side of the rail corridor within the City's right-of-way. Construction and staging with the City right-of-way could temporarily block access to driveways adjacent to construction areas, and could result in delays for emergency response vehicles. Therefore, the construction-related impact related to impaired emergency access would be significant.

Operation

Under the Preferred Project, an at-grade rail crossing at Jennings Avenue would not alter access and circulation along Jennings Avenue. Therefore, no operational impact to emergency access would occur.

However, emergency access could be affected by a rail crossing closure at either W. Sixth Street, W. Seventh Street, or W. Eighth Street. The area of the potential rail crossing closures and the West End Neighborhood are served by three fire stations: Station #1 at 955 Sonoma Avenue; Station #2 at 65 Stony Circle; and Station #8 at 830 Burbank Avenue. With a closure at W. Sixth Street, the length of a probable route between the closure site and the closest fire station would be increased by approximately 580 feet. No change in distance would occur if the closure occurred at W. Seventh Street. With a closure at W. Eighth Street, the length of a probable route between the closure site and the closest fire station would be increased by approximately 1,040 feet. The increased distances at W. Sixth Street and W. Eighth Street would not cause the Santa Rosa Fire Department to be unable to meet their response time goals (SRFD 2014).

Emergency access could also be affected if the Project limited access to driveways or prevented equipment access for emergency vehicles. However, a closure at W. Sixth, W. Seventh or W. Eighth Street would not limit access to driveways or prevent equipment access at specific properties.

Nonetheless, during preliminary discussions of the potential closure options, the Santa Rosa Fire and Police Departments stated that their preferred scenario would be to leave all streets open, to allow for the greatest amount of flexibility in both response and positioning of fire equipment. A letter from the Santa Rosa Fire Department discussing emergency access concerns associated with a rail crossing closure was provided in 2013 (SRFD 2013). The letter states that W.

Sixth Street would affect emergency access, as it provides a continuous east-west route under Highway 101 and provides direct access to the future Downtown Station Area Specific Plan SMART Joint Development Project; and that W. Eighth Street would affect emergency access, as there is no other east-west route in close proximity, and it provides access to Western Farm Center and adjacent warehouses. In summary, the Fire Department letter concludes that the closure of W. Seventh Street would have the least impact on the Fire Department.

While the concerns expressed in the Fire Department's letter are important, such concerns are not sufficient to result in delaying response times such that the Fire Department would be unable to meet their response time goals or sufficient to limit access or prevent equipment access at specific properties. Therefore, the impact of a rail crossing closure at either W. Sixth Street, W. Seventh Street, or W. Eighth Street on emergency access would be less than significant.

Mitigation: **Mitigation Measure TR-1 Traffic Control Plan**

This mitigation measure is defined in Impact TR-1.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Mitigation Measure TR-1 would require that access be maintained to surrounding land uses using steel trench plates, and that the contractor have ready at all times the means necessary to accommodate access by emergency vehicles to such properties, such as plating over excavations, short detours, and/or alternate routes. With implementation of this mitigation measure, the construction-related impact of the Preferred Project on emergency access would be reduced to a less-than-significant level.

Analysis: *Rail Overcrossing Alternative (Significant)*

Construction

Construction of the Rail Overcrossing Alternative would require partial lane closures along Jennings Avenue. Staging areas for construction equipment, vehicles, and supplies would be established on either side of the rail corridor within the City's right-of-way. Construction and staging with the City right-of-way could temporarily block access to driveways adjacent to construction areas, and could result in delays for emergency response vehicles. Therefore, the construction-related impact related to impaired emergency access would be significant.

Operation

A rail overcrossing at Jennings Avenue would include relocation of an existing fire hydrant on the south side of Jennings Avenue west of the rail corridor. The hydrant would be relocated to the new street edge on the south side of Jennings Avenue. The preliminary design of the rail overcrossing also provides a driveway extension under the structure with the necessary overhead clearance for fire equipment access and circulation to offices located on the south side of Jennings Avenue. On-street parking along Jennings Avenue west of the rail corridor would be prohibited for the Rail Overcrossing Alternative to ensure adequate access to adjacent land uses. The 10-foot width of the rail overcrossing ramps would

provide adequate space for emergency medical equipment, such as gurneys, and emergency personnel to traverse the overcrossing. Therefore, the operational impact of the Rail Overcrossing Alternative on emergency access would be less than significant.

Mitigation: **Mitigation Measure TR-1 Traffic Control Plan**

This mitigation measure is defined in Impact TR-1.

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

Mitigation Measure TR-1 would require that access be maintained to surrounding land uses using steel trench plates, and that the contractor have ready at all times the means necessary to accommodate access by emergency vehicles to such properties, such as plating over excavations, short detours, and/or alternate routes. With implementation of this mitigation measure, the construction-related impact of the Rail Overcrossing Alternative on emergency access would be reduced to a less-than-significant level.

Impact: TR-4: Would the Project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Analysis: Preferred Project – At-grade Rail Crossing with Rail Crossing Closure at W. Sixth Street (Significant)

<u>Construction and Operation</u>

Public Transit

Construction and operation of an at-grade rail crossing at Jennings Avenue and a rail crossing closure at W. Sixth Street would not conflict with an existing transit route in the City. No impact to public transit would occur.

In addition, a rail crossing closure at W. Sixth Street would not conflict with the Downtown Station Area Plan policies for coordinating with SMART, transit providers, and major employers to establish bus and shuttle service, as it would not preclude the development of such shuttles given the number of surrounding roadways that could be used to access the proposed Railroad Square SMART station site. Therefore, the impact of a rail crossing closure at W. Sixth Street on public transit would be less than significant.

Bicycle and Pedestrian Facilities

An at-grade rail crossing at Jennings Avenue would implement walking and bicycling facilities as envisioned in the City's General Plan, North Station Area Specific Plan, and Bicycle and Pedestrian Master Plan. In accordance with Policy C-5.8 of the North Station Area Specific Plan, the at-grade rail crossing would establish a pedestrian and bicycle crossing of the SMART rail corridor to link the eastern and western segments of Jennings Avenue. The Preferred Project would also comply with Policy C-3.4 and C-7.2 of the North Station Area Specific Plan, as the rail crossing would be a key element in establishing Jennings Avenue as a bike boulevard, and would establish connections between the proposed linear multi-use SMART pathway along the creek and the overall

pedestrian and bicycle network. The at-grade rail crossing at Jennings Avenue would provide a pedestrian access for students of surrounding schools, most notably, Helen M. Lehman Elementary, and would help link various citywide pedestrian paths. The rail crossing would also improve safety and accessibility for pedestrians and cyclists by providing a traversable, ADA-compliant surface across the SMART rail corridor. Therefore, the proposed at-grade rail crossing at Jennings Avenue would not conflict with adopted policies, plans, or programs regarding bicycle and pedestrian facilities, and would not otherwise decrease the performance or safety of such facilities. No impact would occur.

Closure of a rail crossing at W. Sixth Street would conflict with General Plan Policy T-J-1, which guides the City to pursue implementation of walking and bicycling facilities as envisioned in the City's Bicycle and Pedestrian Master Plan. The closure of a rail crossing at W. Sixth Street would conflict with the route indicated for the future Sixth Street Class II bicycle lane in the General Plan and the Downtown Station Area Plan, and the route for the future bicycle boulevard in the Bicycle and Pedestrian Master Plan. The impact would be significant.

Closure of a rail crossing at W. Sixth Street may also conflict with the Downtown Station Area Plan discussion of W. Sixth Street as a connecting route across Highway 101 because a closure would reduce its function as a cross-city connector.

W. Sixth Street is located within the Railroad Square Sub-Area of the Downtown Station Area Plan. Closure of W. Sixth Street may therefore conflict with Policy SP-T-3 of the Downtown Station Area Plan, which seeks to give priority to pedestrian and bicycle improvements in the Railroad Square Sub-Areas to promote use of these travel modes by those living or working in closest proximity to the station site. A rail crossing closure at W. Sixth Street would eliminate an existing east-west land use connection across the rail corridor which serves to connect the West End Neighborhood with the Railroad Square area, greater downtown Santa Rosa, and the downtown SMART station. As a result of reduced connectivity, the crossing closure could have an impact on the livability of local neighborhoods (defined by General Plan policies as the ability to walk or bike to nearby land use destinations) and reduce the ease of biking or walking to the proposed Railroad Square SMART station.

Such a closure would require the re-routing of pedestrian and bicycle trips, which would likely involve a shift to W. Seventh Street. A shift to W. Seventh Street would add approximately 800 feet onto a bicycle and pedestrian trip seeking to cross the SMART rail corridor using W. Sixth Street. This additional trip length would generally result in less than one minute of additional travel time for cyclists, and approximately 3.5 minutes of travel time for walking pedestrians. The increase in distance would be inconvenient for bicycle and pedestrian traffic bound to continue along Sixth Street. However, the additional distance and time would not exceed the established threshold of half a mile or 15 minutes of walking time, which represents the threshold at which a pedestrian-related trip may switch modes to use a motor vehicle. Therefore, the additional trip length would be reasonable for a bicycle or pedestrian and would not tend to cause a switch to a motor vehicle. Other east-west street connections would still be

available within walking and biking distance. North-south land use connections would remain the same as existing conditions. Therefore, a rail crossing closure at W. Sixth Street would not conflict with adopted policies for bicycle and pedestrian facilities, and the impact on the performance and safety of such facilities would be less than significant.

Mitigation: **Mitigation Measure TR-3: Revise Proposed Bicycle Route on Sixth Street *(Preferred Project with Rail Crossing Closure at W. Sixth Street)***

If a crossing closure is constructed at W. Sixth Street, the City shall amend the Santa Rosa General Plan 2035, the Downtown Station Area Specific Plan, and the Bicycle and Pedestrian Master Plan 2010 to revise the proposed bicycle route on Sixth Street. The bicycle route shall be re-routed at Sixth and Wilson Streets or at Sixth Street and the SMART path (when it has been installed) to go north one block, then cross the rail corridor on Seventh Street, turn south on Adams Street, and return to W. Sixth Street.

After Mitigation: *Preferred Project – At-grade Rail Crossing with Rail Crossing at W. Sixth Street (Less than Significant with Mitigation)*

Mitigation Measure TR-3 would require amending local plans and re-routing a bicycle route to maintain bicycle access in the area. Implementation of this mitigation measure would therefore reduce the impact on the proposed bicycle route at W. Sixth Street to a less-than-significant level.

Analysis: *Preferred Project – At-grade Rail Crossing with Rail Crossing Closure at W. Seventh Street (Less than Significant)*

<u>Construction and Operation</u>

Public Transit

Construction and operation of an at-grade rail crossing at Jennings Avenue and a rail crossing closure at W. Seventh Street would not conflict with an existing transit route in the City. No impact to public transit would occur.

In addition, a rail crossing closure at W. Seventh Street would not conflict with the Downtown Station Area Plan policies for coordinating with SMART, transit providers, and major employers to establish bus and shuttle service, as it would not preclude the development of such shuttles given the number of surrounding roadways that could be used to access the proposed Railroad Square SMART station site. Therefore, the impact of a rail crossing closure at W. Seventh Street on public transit would be less than significant.

Bicycle and Pedestrian Facilities

The proposed at-grade rail crossing at Jennings Avenue would not conflict with adopted policies, plans, or programs regarding bicycle and pedestrian facilities, and would not otherwise decrease the performance or safety of such facilities.

In addition, a rail crossing closure at W. Seventh Street would not conflict with the Downtown Station Area Plan policy for coordinating with SMART to implement the regional pedestrian and bicycle trail along the rail right-of-way, as it would not preclude the development of the pathway.

W. Seventh Street is located within the Railroad Corridor Sub-Area of the Downtown Station Area Plan. Closure of W. Seventh Street may therefore conflict with Policy SP-T-3.4 of the Downtown Station Area Plan, which seeks to give priority to pedestrian and bicycle improvements in the Railroad Square and Railroad Corridor Sub-Areas to promote use of these travel modes by those living or working in closest proximity to the Railroad Square SMART station site. A rail crossing closure at W. Seventh Street would eliminate an existing east-west land use connection across the rail corridor which serves to connect the West End Neighborhood with the Railroad Square area, greater downtown Santa Rosa, and the downtown SMART station. As a result of reduced connectivity, the crossing closure could have an impact on the livability of local neighborhoods and reduce the ease of biking or walking to the proposed Railroad Square SMART station a block to the south. To evaluate the potential conflict, the potential distance and delay associated with re-routing was evaluated.

Such a closure would require the re-routing of pedestrian and bicycle trips, which would likely involve a shift to W. Sixth Street. A shift to W. Sixth Street would add approximately 800 feet onto a bicycle and pedestrian trip seeking to cross the SMART rail corridor using W. Seventh Street. This additional trip length represents less than one minute of additional travel time for cyclists, and approximately 3.5 minutes of travel time for walking pedestrians. The increase in distance would be inconvenient for bicycle and pedestrian traffic bound to continue along Seventh Street. However, the additional distance and time would not exceed half a mile or 15 minutes, and would be a reasonable additional trip length for a bicycle or pedestrian that would not tend to cause a switch to a motor vehicle. Other east-west street connections would still be available within walking and biking distance. North-south land use connections would remain the same as existing conditions. Therefore, a rail crossing closure at W. Seventh Street would not conflict with adopted policies for bicycle and pedestrian facilities, and the impact on the performance and safety of such facilities would be less than significant.

Mitigation: No mitigation is needed.

Analysis: *Preferred Project – At-grade Rail Crossing with Rail Crossing Closure at W. Eighth Street (Significant)*

<u>Construction and Operation</u>

Public Transit

Construction and operation of an at-grade rail crossing at Jennings Avenue would not conflict with adopted policies, plans, or programs regarding public transit given that no transit routes or facilities are located along Jennings Avenue in the Project area.

A rail crossing closure at W. Eighth Street would conflict with City Bus Route 3. City Bus Route 3 currently provides westbound service from the Downtown Transit Mall along Wilson Street from W. Fifth Street to W. Eighth Street. Route 3 utilizes the existing at-grade rail crossing at W. Eighth Street to access the west side of the rail corridor, before heading north along Donahue Street to W. Ninth Street. A bus stop is located at the corner of W. Eighth Street and

Donahue Street. Because a rail crossing closure at W. Eighth Street would conflict with City Bus Route 3, the impact would be significant.

Bicycle and Pedestrian Facilities

Construction and operation of an at-grade rail crossing at Jennings Avenue would not conflict with adopted policies, plans, or programs regarding bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. No impact would occur.

W. Eighth Street is designated as an existing Pedestrian Connector in the Downtown Station Area Plan. The Downtown Station Area Plan characterizes Pedestrian Connectors as corridors that carry automobile traffic, but that are key routes within and across neighborhoods for non-vehicular circulation. A rail crossing closure at W. Eighth Street would disconnect the east-west Pedestrian Connector across the rail corridor. As a result of reduced connectivity, the crossing closure could have an impact on the livability of local neighborhoods and reduce the ease of biking or walking within the planning area. This conflict with the Transportation element of the Downtown Station Area Plan would be a significant impact.

W. Eighth Street is located within the Railroad Corridor Sub-Area of the Downtown Station Area Plan. Closure of W. Eighth Street may therefore conflict with Policy SP-T-3.4 of the Downtown Station Area Plan, which seeks to give priority to pedestrian and bicycle improvements in the Railroad Square and Railroad Corridor Sub-Areas to promote use of these travel modes by those living or working in closest proximity to the station site. A rail crossing closure at W. Sixth Street would eliminate an existing east-west land use connection across the rail corridor which serves to connect the West End Neighborhood with the Railroad Square area, greater downtown Santa Rosa, and the downtown SMART station. To evaluate this potential conflict, the potential distance and delay associated with re-routing was evaluated.

Closure of a rail crossing at W. Eighth Street would require the re-routing of pedestrian and bicycle trips, which would likely involve a shift to W. Ninth Street. A shift to W. Ninth Street would add approximately 2,000 feet (0.38 mile) onto a bicycle and pedestrian trip seeking to cross the SMART rail corridor using W. Eighth Street. This additional trip length would generally result an additional 2.5 minutes of travel time for cyclists, and approximately 8.5 minutes of travel time for walking pedestrians. The increase in distance would be inconvenient for bicycle and pedestrian traffic accustomed to using W. Eighth Street. However, the additional distance and time would not exceed the established threshold of half a mile or 15 minutes, and is not expected to cause a switch to a motor vehicle. The impact would be less than significant.

A rail crossing closure at W. Eighth Street would not conflict with the Downtown Station Area Plan policy for coordinating with SMART to implement the regional pedestrian and bicycle trail along the rail right-of-way, as it would not preclude the development of the pathway. The SMART pathway could still be accessed from surrounding east-west connections within walking and biking distance. North-south land use connections would remain the same as existing conditions.

Closure of a rail crossing at W. Eighth Street would not conflict with an existing or proposed bicycle facility identified in the City's General Plan, Downtown Station Area Plan, or Bicycle and Pedestrian Master Plan.

Designated overflow parking for the City's DeTurk Round Barn facility is located to the east of the rail corridor at the parking lot customarily used for the Kid Street Learning Center at W. Eighth Street and Davis Street. Because the DeTurk Round Barn is located on the west side of the rail corridor, closure of a rail crossing at W. Eighth Street would require the re-routing of patrons (or visitors or school children) attempting to reach the DeTurk Round Barn from the overflow parking lot, which would likely involve a shift to W. Ninth Street. A shift to W. Ninth Street would add approximately 500 feet onto a patron trip seeking to cross the SMART rail corridor using W. Eighth Street. This additional trip length would represent less than 3.5 minutes of travel time for walking pedestrians. The increase in distance would be inconvenient for patrons accustomed to using W. Eighth Street. However, the additional distance and time would not be substantial, and sidewalks present along W. Ninth Street would provide for safe movement. The impact would be less than significant.

Mitigation: **Mitigation Measure TR-4 – Implement Wilson Street Corridor Improvements *(Preferred Project with Rail Crossing Closure at W. Eighth Street)***

Prior to construction, the City shall implement components of the Wilson Street improvements identified in Appendix V of the 2010 Bicycle and Pedestrian Master Plan that would allow for re-routing of City Bus Route 3 along Wilson Street to W. Ninth Street. This shall include a provision for parking pockets within the wider sections of sidewalk to accommodate a wider travel lane for transit use.

After Mitigation: *Preferred Project – At-grade Rail Crossing with Rail Crossing at W. Eighth Street (Significant and Unavoidable)*

Mitigation Measure TR-4 would require implementation of improvements along Wilson Street to allow re-routing of the City Bus Route 3 along Wilson Street to W. Ninth Street. Implementation of this mitigation measure would reduce the impact of a rail crossing closure at W. Eighth Street on public transit facilities to a less-than-significant level.

No feasible mitigation is available to reduce the conflict with the Downtown Station Area Specific plan which designates W. Eighth Street as a Pedestrian Connector. Re-routing of the Pedestrian Connector to W. Ninth Street or Madison Street and W. Seventh Street would no longer serve the same purpose as the connector on W. Eighth Street. Therefore, the impact would be significant and unavoidable.

Analysis: *Rail Overcrossing Alternative (No Impact)*

<u>Construction and Operation</u>

Public Transit

Construction and operation of the Rail Overcrossing Alternative at Jennings Avenue would not conflict with an existing transit route in the City. No impact to public transit would occur.

Bicycle and Pedestrian Facilities

The Rail Overcrossing Alternative at Jennings Avenue would implement walking and bicycling facilities as envisioned in the City's General Plan, North Station Area Plan, and Bicycle and Pedestrian Master Plan. In accordance with Policy C-5.8 of the North Station Area Specific Plan, the Rail Overcrossing Alternative would establish a pedestrian and bicycle crossing of the SMART rail corridor to link the eastern and western segments of Jennings Avenue. The Rail Overcrossing Alternative would also comply with Policies C-3.4 and C-7.2 of the North Santa Rosa Station Area Specific Plan, as the proposed rail crossing would be a key element in establishing Jennings Avenue as a bike boulevard, and would establish connections between the proposed linear multi-use SMART pathway along the creek and the overall pedestrian and bicycle network.

The rail overcrossing at Jennings Avenue would provide a safe pedestrian access for students of surrounding schools, most notably, Helen M. Lehman Elementary located west of the rail corridor. The rail crossing would also help link the various citywide and regional pedestrian paths, including the SMART pathway. This rail crossing would also improve safety and accessibility for pedestrians and cyclists by providing a traversable, ADA-compliant surface across the SMART rail corridor. Therefore, the operation of the Rail Overcrossing Alternative would not conflict with adopted policies, plans, or programs regarding bicycle and pedestrian facilities, and would not otherwise decrease the performance or safety of such facilities. No impact would occur.

Mitigation: No mitigation is needed.

3.12.7 Cumulative Impacts

Impact: TR-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to transportation?

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

<u>Construction</u>

Construction of only one cumulative project may overlap with the construction period of the Preferred Project at the Jennings Avenue Project site, the Edwards Avenue commercial project. The construction period for the Edwards Avenue project is unknown, but even if it coincided with construction of at the Jennings Avenue Project site, construction traffic from both projects together would not cause a significant cumulative impact given the availability of a variety of roadways in the Project area and the temporary and intermittent nature of construction traffic.

Construction of several cumulative projects may overlap with the construction period of the crossing closure at W. Sixth Street, W. Seventh Street, or W. Eighth Street. These may include the DeTurk Winery Village, the West End Village, the Sixth and Davis Project, the Santa Rosa Canners project, and other redevelopment projects implementing the Downtown Station Area Specific Plan. The construction period for these projects is unknown, but the construction traffic for the crossing closures would be so small and of such a short duration that

even if construction of a crossing closure coincided with construction of one or more of the other cumulative projects, construction traffic from the projects together would not cause a significant cumulative impact given the availability of a variety of roadways in the area and the temporary and intermittent nature of construction traffic.

The SMART pathway is a cumulative project and is a proposed Class I pedestrian and bicycle path to be located along the SMART rail corridor. The SMART pathway has not yet been constructed, and it is uncertain exactly when it will be constructed in the vicinity of the Project areas. Based on the preliminary design of the pathway, it is anticipated to be located on the east side of the rail corridor at Jennings Avenue, W. Sixth Street, W. Seventh Street, and W. Eighth Street. If the SMART pathway were in place prior to construction of the Preferred Project, then construction activities associated with an at-grade rail crossing at Jennings Avenue and a rail crossing closure at either W. Sixth Street, W. Seventh Street, or W. Eighth Street would encroach on portions of the pathway, thereby impacting the performance and safety of the SMART pathway. The temporary cumulative impact associated with construction along the SMART pathway is, therefore, significant and the contribution of the Project is cumulatively considerable.

<u>Operation</u>

To evaluate the cumulative effect of the Project on local roadways, the same methodology was applied as was utilized for the Project-specific analysis reported in Impact TR-1. The potential cumulative impacts of future development to the Study area were evaluated under the Cumulative Peak Hour scenarios. In order to be consistent with the City of Santa Rosa General Plan, the forecast year of 2035 was chosen to represent cumulative conditions. The forecasted traffic volumes at each of the study intersections for year 2035 were obtained through application of a 1.2% annual population growth rate, as identified as a city-wide population growth rate with the City of Santa Rosa General Plan. While it is expected that future transportation management programs, bicycle and pedestrian improvements, and commuter use of the SMART rail corridor could reduce the need for motor vehicles in the study area, motor vehicle traffic volumes were calculated to be consistent with population growth for a conservative estimate. This growth rate was compared to growth rates used to approximate cumulative conditions in the proposed North Santa Rosa Station Area Specific Plan and Downtown Station Area Specific Plan, and the population growth rate was found to meet and exceed the growth approximated with these plans.

The LOS calculations for the study intersections for both the cumulative and cumulative plus Project scenarios are summarized in Table 3.12-5 (Summary of Cumulative plus Preferred Project Peak Hour Intersection Level of Service Calculations).

Cumulative Scenario without Preferred Project

Under the cumulative conditions scenario without the Project, the intersection of W. Ninth Street and Wilson Street is expected to operate at LOS E in the P.M.

peak hour. Although the anticipated LOS for this intersection exceeds the City's LOS D standard, the intersection of W. Ninth Street and Wilson Street is located within the downtown area, a designated portion of the City in which the LOS standard does not apply. All other movements within the study intersections are expected to continue operating in accordance with adopted LOS thresholds in the cumulative scenario.

Cumulative Scenario with Preferred Project

Under the cumulative plus Preferred Project scenario, closure of a rail crossing at W. Sixth Street and the subsequent re-distribution of peak hour traffic volumes to W. Seventh Street would lower the LOS for the eastbound movement at W. Seventh Street and Wilson Street from LOS C in the cumulative condition to LOS F in the P.M. peak hour. Although the anticipated LOS for this intersection would exceed the City's LOS D standard, the intersection of W. Seventh Street and Wilson Street is located within the downtown area, a designated portion of the City in which the LOS standard does not apply. Therefore, the cumulative impact would be less than significant. All other movements within the study intersections are expected to continue operating at the same LOS as under cumulative conditions without the Project, and would be within the acceptable LOS thresholds.

Under the cumulative plus Preferred Project scenario, closure of a rail crossing at W. Seventh Street and the subsequent re-distribution of peak hour traffic volumes to W. Sixth Street would lower the LOS for the intersection at W. Sixth Street and Wilson Street from LOS C in the cumulative condition to LOS E in the P.M. peak hour. Although the anticipated LOS for this intersection would exceed the City's LOS D standard, the intersection of W. Sixth Street and Wilson Street is located within the downtown area, a designated portion of the City in which the LOS standard does not apply. Therefore, the cumulative impact would be less than significant. All other movements within the study intersections are expected to continue operating at the same LOS as under cumulative conditions without the Project, and would be within the acceptable LOS thresholds.

Under the cumulative plus Preferred Project scenario, closure of a rail crossing at W. Eighth Street and the subsequent re-distribution of peak hour traffic volumes to W. Ninth Street would lower the LOS for the intersection at W. Ninth Street and Wilson Street from LOS E in the cumulative condition to LOS F in the P.M. peak hour. Although the anticipated LOS for this intersection would exceed the City's LOS D standard, the intersection of W. Ninth Street and Wilson Street is located within the downtown area, a designated portion of the City in which the City's LOS standard does not apply. Therefore, the cumulative impact would be less than significant.

Closure of a rail crossing at any of the three streets would disperse traffic onto smaller streets, such as Adams Street, within the West End neighborhood. The neighborhood provides a network of streets that allows multiple paths for connecting to destinations within and adjacent to the area. Cumulative traffic volumes at these intersections with additional trips from a rail crossing closure are found to generate little or no additional delay and would not generate unacceptable LOS. P.M. peak period traffic volumes at the intersections in the

Table 3.12-5 Summary of Cumulative plus Preferred Project Peak Hour Intersection Level of Service Calculations

Intersection	A.M. Peak				Midday Peak				School Dismissal Peak				P.M. Peak			
	Cumul. without Project	With W. 6th Closure	With W. 7th Closure	With W. 8th Closure	Cumul. without Project.	With W. 6th Closure	With W. 7th Closure	With W. 8th Closure	Cumul. without Project.	With W. 6th Closure	With W. 7th Closure	With W. 8th Closure	Cumul. without Project.	With W. 6th Closure	With W. 7th Closure	With W. 8th Closure
	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS
1. W. 9th St./N. Dutton	11.2/B	11.2/B	11.2/B	11.2/B	9.3/A	9.3/A	9.3/A	9.3/A	10.8/B	10.8/B	10.8/B	10.8/B	10.7/B	10.7/B	10.7/B	10.7/B
2. W. 8th St./N. Dutton																
Eastbound Approach	*12.3/B*	*12.3/B*	*12.3/B*	*12.3/B*	*11.8/B*	*11.8/B*	*11.8/B*	*11.8/B*	*12.4/B*	*12.4/B*	*12.4/B*	*12.4/B*	*13.0/B*	*13.0/B*	*13.0/B*	*13.0/B*
Westbound Approach	*23.6/C*	*23.6/C*	*23.6/C*	*23.6/C*	*14.6/B*	*14.6/B*	*14.6/B*	*14.6/B*	*18.6/C*	*18.6/C*	*18.6/C*	*18.6/C*	*21.0/C*	*21.0/C*	*21.0/C*	*21.0/C*
Northbound Left Turn	8.8/A	8.8/A	8.8/A	8.8/A	9.4/A	9.4/A	9.4/A	9.4/A	9.3/A	9.3/A	9.3/A	9.3/A	10.7/B	10.7/B	10.7/B	10.7/B
Southbound Left Turn	10.4/B	10.4/B	10.4/B	10.4/B	8.9/A	8.9/A	8.9/A	8.9/A	9.2/A	9.2/A	9.2/A	9.2/A	10.8/B	10.8/B	10.8/B	10.8/B
3. W. 9th St./Wilson St.	13.2/B	13.2/B	13.2/B	14.4/B	11.1/B	11.1/B	11.1/B	12.1/B	14.7/B	14.7/B	14.7/B	16.8/C	37.3/E*	37.3/E*	37.3/E*	**55.9/F***
4. W. 8th St./Wilson St.																
Eastbound Approach	*11.5/B*	*11.5/B*	*11.5/B*	*11.3/B*	*11.9/B*	*11.9/B*	*11.9/B*	*9.3/A*	*12.8/B*	*12.8/B*	*12.8/B*	*13.4/B*	*14.6/B*	*14.6/B*	*14.6/B*	*0.0/A*
Westbound Approach	*10.6/B*	*10.6/B*	*10.6/B*	*10.2/B*	*12.1/B*	*12.1/B*	*12.1/B*	*10.9/B*	*12.0/B*	*12.0/B*	*12.0/B*	*10.8/B*	*14.4/B*	*14.4/B*	*14.4/B*	*12.7/B*
Northbound Left Turn	1.0/A	1.0/A	1.0/A	0.0/A	1.1/A	1.1/A	1.1/A	0.1/A	1.0/A	1.0/A	1.0/A	0.0/A	0.9/A	0.9/A	0.9/A	0.0/A
Southbound Left Turn	0.1/A	0.1/A	0.1/A	0.1/A	0.4/A	0.4/A	0.4/A	0.5/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.3/A
5. W. 7th St./Wilson St.																
Eastbound Approach	*11.1/B*	*13.3/B*	*0.0/A*	*11.1/B*	*12.0/B*	*16.1/C*	*0.0/A*	*12.0/B*	*13.8/B*	*22.4/C*	*0.0/A*	*13.8/B*	*19.4/C*	***116.4/F****	*0.0/A*	*19.4/C*
Westbound Approach	*12.5/B*	*14.3/B*	*11.4/B*	*12.5/B*	*13.3/B*	*16.7/C*	*11.5/B*	*13.3/B*	*11.5/B*	*14.1/B*	*10.6/B*	*11.5/B*	*14.0/B*	*18.6/C*	*12.8/B*	*14.0/B*
Northbound Left Turn	1.2/A	2.1/A	0.0/A	1.2/A	1.8/A	3.4/A	0.0/A	1.8/A	1.9/A	3.9/A	0.0/A	1.9/A	2.3/A	5.1/A	0.0/A	2.3/A
Southbound Left Turn	0.2/A	0.2/A	0.2/A	0.2/A	0.5/A	0.5/A	0.5/A	0.5/A	0.3/A	0.3/A	0.3/A	0.3/A	0.3/A	0.3/A	0.3/A	0.3/A
6. W. 6th St./Wilson St.	9.2/A	9.1/A	9.7/A	9.2/A	10.4/B	10.1/B	12.1/B	10.4/B	11.1/B	10.5/B	13.2/B	11.1/B	18.4/C	15.9/C	**38.9/E***	18.4/C

Notes: *Italics* = results for minor movements at unsignalized intersections
* = Intersection in downtown, no LOS threshold. Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

West End neighborhood are 30 to 60 percent of the highly utilized intersections along Wilson Street in the cumulative condition and can therefore accommodate the increased trips from a rail crossing closure without substantial increased congestion.

The Preferred Project would not contribute to a significant cumulative impact relative to traffic congestion.

Mitigation: **Mitigation Measure C-TR-1: Reduce Conflicts with SMART Pathway during Construction *(Preferred Project and Rail Overcrossing Alternative)***

If the SMART pathway has been constructed prior to construction of the Project, the City shall require contractors to maintain safe pedestrian and bicycle access along the SMART pathway during construction, to the extent feasible. Warning signs shall be posted that indicate bicycles, pedestrians and vehicles are sharing the lane, and detours shall be included for bicycles and pedestrians, if needed, and where feasible. This may include a temporary detour of the SMART pathway along N. Dutton Avenue between Guerneville Road to the north and W. College Avenue to the south. Equipment and materials shall be stored in such a manner to minimize obstruction of bicycle and pedestrian traffic.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Mitigation Measure C-TR-1 would require maintaining bike and pedestrian access along the SMART pathway during construction. For the Preferred Project, it may be feasible for construction to maintain substantial access through the construction zone, albeit with some delays. Because a temporary detour of the SMART pathway could also be established, if needed, along N. Dutton Avenue between Guerneville Road and W. College Avenue, implementation of this mitigation measure would reduce the potential cumulative impact of the Preferred Project on the performance and safety of the SMART pathway to a less-than-significant level.

Analysis: *Rail Overcrossing Alternative (Significant)*

<u>Construction</u>

Construction of only one cumulative project may overlap with the construction period of the at the Jennings Avenue Project site, the Edwards Avenue commercial project. The construction period for the Edwards Avenue project is unknown, but even if it coincided with construction of at the Jennings Avenue Project site, construction traffic from both projects together would not cause a significant cumulative impact given the availability of a variety of roadways in the Project area and the temporary and intermittent nature of construction traffic.

The SMART pathway is a cumulative project and is a proposed Class I pedestrian and bicycle path to be located along the SMART rail corridor. The SMART pathway has not yet been constructed, and it is uncertain exactly when it will be constructed in the vicinity of Jennings Avenue. Based on the preliminary design of the pathway, it is anticipated to be located on the east side of the rail corridor at Jennings Avenue. If the SMART pathway were in place prior to construction of the rail overcrossing, then construction activities would encroach on portions of the pathway, thereby impacting the performance and safety of the

facility. The temporary cumulative impact associated with construction along the SMART pathway is, therefore, significant and the contribution of the Rail Overcrossing Alternative is cumulatively considerable.

Operation

The Rail Overcrossing Alternative is not intended for automobile traffic, and would not generate any additional vehicular trips to the Jennings Avenue project area. Therefore, a rail overcrossing at Jennings Avenue would have no cumulative impact related to vehicular traffic. The Rail Overcrossing Alternative would not require the closure of a rail crossing elsewhere in the City, and would not result in cumulative impacts to bicycle, pedestrian, and transit facilities. No significant operational cumulative impact is anticipated to occur.

Mitigation: **Mitigation Measure C-TR-1: Reduce Conflicts with SMART Pathway during Construction *(Preferred Project and Rail Overcrossing Alternative)***

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

Mitigation Measure C-TR-1 would require maintaining bike and pedestrian access along the SMART pathway during construction of the rail overcrossing, where feasible, and establishing detours for bicycles and pedestrians, if needed. Because a temporary detour of the SMART pathway could be established, if needed, along N. Dutton Avenue between Guerneville Road and W. College Avenue, implementation of this mitigation measure would reduce the potential cumulative impact of the Rail Overcrossing Alternative on the performance and safety of the SMART pathway to a less-than-significant level.

3.12.8 References

Santa Rosa, City of (Santa Rosa). 2007. *Downtown Station Area Specific Plan.* October.

Santa Rosa. 2009. *City of Santa Rosa General Plan 2035.* November.

Santa Rosa. 2010. *City of Santa Rosa Bicycle and Pedestrian Master Plan 2010.* September.

Santa Rosa. 2012. *North Santa Rosa Station Area Specific Plan.* September.

Santa Rosa Fire Department (SRFD). 2013. Letter from Santa Rosa Fire Department. December 31.

SRFD. 2014. Personal Communication, Deputy Fire Chief William Shubin, August 2014.

3.13 Utilities and Service Systems

This section evaluates potential impacts related to utilities and service systems during construction and operation of the Project. To provide the basis for this evaluation, the Setting section provides an overview of the existing utilities and regulatory framework that is applicable to the Project. The evaluation section establishes the thresholds of significance, evaluates potential utilities and service system impacts, and identifies appropriate mitigation measures, as necessary.

3.13.1 Impacts Evaluated in Other Sections

The following subjects are related to utilities and service systems, but are evaluated in other sections of this document:

- Potential impacts related to storm water runoff that could exceed the capacity of existing or planned storm water drainage systems are evaluated in Section 3.8, Hydrology and Water Quality.

3.13.2 Setting

Wastewater

Sewage generated from residential, commercial, and industrial uses within the City of Santa Rosa is collected and transported to the Subregional Laguna Water Reuse Facility, known as the Laguna Plant, located southwest of the City on Llano Road. The Laguna Plant, is part of the Santa Rosa Subregional Water Reuse System, which is managed by the City and provides wastewater treatment and disposal services for the City as well as for Rohnert Park, Cotati, Sebastopol, and the South Park Sanitation District. Wastewater is tertiary-treated and, depending upon the amount of rainfall received in any given year, between 90 and 100 percent is recycled for urban and agricultural irrigation and for the Geysers Recharge Project. The Laguna Plant operates under National Pollutant Discharge Elimination System (NPDES) permit No. CA0022764, which sets Waste Discharge Requirements (WDRs) for the Laguna Plant, along with the remainder of the Santa Rosa Subregional Water Reclamation System (NCRWQCB 2006). The Laguna Plant had an average daily dry weather flow (ADWF) of 15.05 million gallons per day (mgd) in 2013 and is permitted for 21.34 mgd average daily dry weather flow (Laguna Treatment Plant 2014; Santa Rosa 2014; Santa Rosa 2011). Projects under Santa Rosa's Subregional Water Reuse System Incremental Recycled Water Program (IRWP), which was originally undertaken in 2001, will be implemented as growth occurs, eventually increasing the plant's capacity to 25.79 mgd, 18.25 mgd of which would be allocated to Santa Rosa. This expanded capacity will be sufficient to meet the City's wastewater needs through the buildout of the General Plan.

Storm Water

Within Santa Rosa, the Public Works Department maintains over 338 miles of underground storm water pipes and over 18,000 storm water structures (Santa Rosa 2012). The City provides storm drainage collection within the Project area and is responsible for operation and maintenance of the collection system. The existing storm drain systems in the area of the Jennings Avenue site consist of 15- to 54-inch-diameter storm drain pipes in Jennings Avenue, Cleveland Avenue, Edwards Avenue, Frances Street, Steele Lane, and Guerneville Road, with multiple outfalls into Steele Creek (Santa Rosa 2012). Pedestrians and bicyclists currently cross Steele Creek via a storm drain box culvert. The City's current NPDES storm water permit regulates both stormwater and non-stormwater discharges from public and private projects with the intent to reduce stormwater

pollution, protect the water quality of creeks and waterways, and promote infiltration. (Santa Rosa 2012)

Solid Waste

Solid waste management in the Project area is the responsibility of the City through a franchise agreement with Sonoma County. The County owns the Central Disposal Site, which includes a local landfill and compost facilities. The Sonoma County Waste Management Agency (SCWMA), formed in 1992, is the joint powers authority of the nine cities and the County of Sonoma. The specific focus of the SCWMA's efforts is the implementation of regional waste diversion programs as required by AB 939. The SCMWA fulfills the solid waste planning and reporting requirements for the region.

Solid waste from the City of Santa Rosa is collected and hauled to the Central Disposal Site landfill for appropriate disposal. The Central Disposal Site landfill has a maximum daily permitted tonnage of 2,500 tons (Cal Recycle 2012). As of 2010, the Central Disposal Site landfill has approximately 5.64 million tons of permitted landfill capacity remaining (SCWMA n.d.). The Central Disposal Facility also includes a compost site with a maximum daily permitted capacity of 300 tons (Cal Recycle 2013a).

Materials with no practical reuse and materials that are potentially contaminated would be disposed of at regional landfills, such as the Redwood Sanitary Landfill in Marin County, the Potrero Hills Landfill in Solano County, and the Keller Canyon Landfill in Contra Costa County. Redwood Sanitary Landfill has a maximum daily permitted tonnage of 2,310 tons (Waste Management 2013). The total remaining capacity as of 2008 (last reported date) is 26 million cubic yards (Cal Recycle 2014). The Potrero Hills Landfill has a maximum daily permitted tonnage of 4,330 tons/day and a remaining capacity of 61 million cubic yards (Cal Recycle 2013b; Potrero Hills, personal communication, 2014). The Keller Canyon Landfill has a maximum daily permitted tonnage of 3,500 tons/day and a remaining capacity of 58 million cubic yards (Cal Recycle 2013c; Caffey, personal communication, 2014).

Water Supply

The City of Santa Rosa receives its primary potable water supply from the Russian River watershed. Water is provided through the Russian River Project managed by the Sonoma County Water Agency (SCWA). The SCWA has supplied water to meet the City of Santa Rosa's demands since the 1970s. In addition to surface water supply, the SCWA also has three groundwater wells in the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin. (Santa Rosa 2009)

The City of Santa Rosa owns two groundwater wells at Farmers Lane which provide up to 3.2 mgd of potable water, as needed. The City also has approximately 1.1 million gallons per day (mgd) of groundwater capacity on a stand-by emergency basis. (Santa Rosa 2013)

Electricity and Natural Gas

Electrical power and natural gas in the Project area are provided by Pacific Gas and Electric Company (PG&E). PG&E is regulated by the CPUC and is the primary provider of gas and electrical power to Sonoma County. PG&E purchases both gas and electrical power from a variety of sources, including other utility companies.

Telephone

The telephone service in the Project area is provided by AT&T. AT&T has an extensive network of underground and overhead facilities throughout the City.

3.13.3 Regulatory Framework

Federal

Clean Water Act

The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under the Clean Water Act, the U.S. Environmental Protection Agency (U.S. EPA) has implemented pollution control programs such as setting wastewater standards for industry and water quality standards for all contaminants in surface waters. The Clean Water Act made it unlawful to discharge any pollutant from a point source (direct discharge) into navigable waters. The U.S. EPA's NPDES permit program controls direct and non-point discharges through the NCRWQCB (Santa Rosa 2012).

State

Porter-Cologne Water Quality Control Act

In 1969, the California Legislature enacted the Porter-Cologne Water Quality Control Act to preserve, enhance, and restore the quality of the state's water resources. The act established the State Water Resources Control Board (SWRCB) and nine RWQCBs as the principal State agencies with the responsibility for controlling water quality in California. The SWRCB is responsible for implementing the Clean Water Act, issues NPDES permits to cities and counties through Regional Water Quality Control Boards, and implements and enforces the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (Order No. 2009-0009, as amended by Order No. 2010-0014). Order No. 2009-0009 took effect on July 1, 2010 and was amended on February 14, 2011. The Order applies to construction sites that include one or more acres of soil disturbance. Construction activities include clearing, grading, grubbing, excavation, stockpiling, and reconstruction of existing facilities involving removal or replacement.

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act of 1989 (Public Resources Code Division 30), enacted through Assembly Bill (AB) 939 and modified by subsequent legislation, required all California cities and counties to implement programs to divert waste from landfills (Public Resources Code Section 41780). Compliance with AB 939 is determined by the Department of Resources, Recycling, and Recovery (Cal Recycle), formerly known as the California Integrated Waste Management Board (CIWMB).

The SCWMA, on behalf of the County, calculates its diversion rate. The diversion rate is the percentage of total waste that a jurisdiction diverted from disposal at Cal Recycle-permitted landfills and transformation facilities through reduction, reuse, recycling programs, and composting programs based on the base year of 1990. Jurisdictions were required by law to achieve 50 percent diversion for the year 2000. In 2006, Sonoma County achieved a 64 percent diversion rate (SCWMA 2013).

As of 2007, jurisdictions' diversion rates were no longer calculated by Cal Recycle to determine compliance with AB 939. Instead, a per capita disposal rate was used as a benchmark of program effectiveness. The statutory change was instituted by Senate Bill (SB) 1016. As of 2011, Sonoma County's waste diversion rate was 3.5 pounds per person per day (SCWMA 2013).

Utility Notification Requirements

Title 8, Section 1541 of the California Code of Regulations requires excavators to determine the approximate locations of subsurface installations such as sewer, telephone, fuel, electric, and waterlines (or any other subsurface installations that may reasonably be encountered during excavation work) prior to opening an excavation. The California Government Code (Sections 4216 et seq.) requires owners and operators of underground utilities to become members of and participate in a regional notification center. According to Section 4216.1, operators of subsurface installations who are members of, participate in, and share, in the costs of a regional notification center are in compliance with this section of the code. Underground Service Alert North (USA North) receives planned excavation reports from public and private excavators and transmits those reports to all participating members of USA North that may have underground facilities at the location of excavation. At this point, members of the regional notification center will mark or stake their facilities, provide information, or give clearance to dig (USA North 2013).

Regional and Local

North Coast Regional Water Quality Control Board

The NCRWQCB develops and enforces water quality objectives and implementation plans that safeguard the quality of water resources in its region, including the City of Santa Rosa. In accordance with California Water Code Section 13263, the State's RWQCBs are authorized to issue Waste Discharge Requirements (WDRs) as well as periodically review self-monitoring reports submitted by the discharger, and perform independent compliance checking.

NCRWQCB Order No. R1-2009-0045, Waste Discharge Requirements for Low Threat Discharges to Surface Waters in the North Coast Region, applies to discharges of construction excavation dewatering into the storm drain system (NCRWQCB 2009b). This Order requires development of a Best Management Practices/Pollution Prevention Plan to characterize the discharge and to identify specific measures to control the discharge, such as sediment controls to ensure that excessive sediment is not discharged, and flow controls to prevent erosion and flooding downstream of the discharge.

Countywide Integrated Waste Management Plan

As required by the California Integrated Waste Management Act of 1989, Sonoma County conducted a solid waste generation study in 2003 and developed a Source Reduction and Recycling Element (SSRE) that has been incorporated into the Countywide Integrated Waste Management Plan. The Plan, which was updated and submitted to Cal Recycle in 2003, requires recycling programs that are expected to result in a 50 percent diversion away from landfills, thereby extending the life of landfills. The Countywide Integrated Waste Management Plan has a goal of achieving a 70 percent diversion rate by 2015 based by 1990 rates (Santa Rosa 2009).

City of Santa Rosa Stormwater Requirements

NCRWQCB Order No. R1-2009-0050 is the City of Santa Rosa's current NPDES storm water permit (NCRWQCB 2009a). The permit regulates both storm water and non-storm water discharges from public and private projects into the Santa Rosa municipal storm drain system. The permit requires a minimum set of best management practices (BMPs) to be implemented at all construction sites, as well as permanent storm water low impact development BMPs. In August 2011, the City adopted its Storm Water Low Impact Development Technical Design Manual (Santa Rosa 2011), which applies to both privately sponsored projects and capital improvement projects that meeting any of the following criteria:

- Development that creates or replaces a combined total of 1 acre or more of new impervious surface;
- Street, road, highway, or freeway construction or reconstruction, creating or replacing 10,000 square feet or more of impervious surface;
- All development that includes four or more dwelling units;
- Industrial parks, commercial strip malls, retail gasoline outlets, restaurants, or automotive service facilities creating or replacing 10,000 square feet or more of impervious surface. Parking lots, 25 or more spaces or 10,000 square feet not associated with other projects; or
- Parking lots with 25 or more spaces or 10,000 square feet not associated with other Projects.

Projects that meet the criteria must capture, treat, and infiltrate storm water as close to the source as possible using small scale landscape-based features located throughout the Project site.

City of Santa Rosa General Plan Goals and Policies

The following are the goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.

PSF-H **Meet the city's solid waste disposal needs, while maximizing opportunities for waste reduction and recycling.**

North Santa Rosa Station Area Specific Plan Goals and Policies

The following are the goals and policies from the *North Santa Rosa Station Area Specific Plan* that are applicable to the Project.

PF-6 **Solid waste disposal needs of existing and new development in the Plan area should be met while providing opportunities for reduction, reuse, and recycling.**

Downtown Santa Rosa Station Area Specific Plan Goals and Policies.

The following are the goals and policies from the *Downtown Santa Rosa Station Area Specific Plan* that are applicable to the Project.

SP-UPS-4 **Solid waste disposal needs of existing and new development in the Plan Area should be met while providing opportunities for reduction, reuse and recycling.**

3.13.4 Evaluation Criteria and Significance Thresholds

Table 3.13-1 Evaluation Criteria and Significance Thresholds

Evaluation Criteria	Significance Threshold	Sources
UT-1: Would the Project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, or result in a determination by the wastewater treatment provider which services the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	Wastewater flows exceeding discharge limitations or treatment capacity of the Laguna Plant Non-compliance with applicable NPDES or WDR treatment requirements	CEQA Guidelines Appendix G, Checklist Item XVII (a, b and e)
UT-2: Would the Project be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs, and will the Project comply with federal, State and local statutes and regulations related to solid waste?	Increase in solid waste exceeding local landfill capacity. Non-compliance with the requirements of any applicable state or local solid waste diversion regulations or Santa Rosa General Plan policies	CEQA Guidelines Appendix G, Checklist Item XVII (f and g) Santa Rosa General Plan, Goal PSF-H North Santa Rosa Station Area Specific Plan, Goal PF-6 Downtown Santa Rosa Station Area Specific Plan, Goal SP-UPS-4
UT-3: Would the Project result in potential damage to or temporary disruption of existing utilities?	Any damage or disruption	Title 8, Section 1541 of the California Code of Regulations

Areas of No Project Impact

As explained below, the proposed Project would not result in impacts related to several utilities Checklist questions contained in Appendix G of the current CEQA Guidelines. For the reasons presented below, the following evaluation criteria are not applicable to the Project:

- ***Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.***

  The Project does not include the construction or expansion of water or wastewater treatment facilities. During construction, City water supplies may be used for such activities as dust control and equipment cleaning, and groundwater generated during dewatering activities may potentially be discharged to the City's Laguna Plant. Construction-related water demands and wastewater discharges would be short-term and minimal in volume and would not require construction or expansion of water or wastewater treatment facilities. Following construction, operation of the proposed Project would not require wastewater services, and potable water demand would not be required beyond that associated with potential temporary irrigation of replacement trees at the Jennings Avenue site. The Project would, therefore, not require or

result in the construction of new water or wastewater treatment facilities or expansion of existing facilities to serve the Project. Therefore, this significance criterion is not applicable to the Project and is not discussed further.

- ***Would the Project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?***

  The Preferred Project does not include new storm water drainage facilities. Construction related discharges of groundwater would be short-term and would not require new on-site or off-site storm water drainage facilities. Following construction, increases in runoff would be minimal. The Rail Overcrossing Alternative includes reconstructed storm water drainage facilities such as construction of curb, gutter, storm water inlets and manholes. However, the storm water improvements are for reconstruction purposes due to the revised street alignment, and not for the purposes of receiving additional flow. The Preferred Project and the Rail Overcrossing Alternative do not meet the low impact development trigger in the City's storm water permit, and would not be expected to increase the rate or amount of surface runoff in a manner that would exceed the capacity of drainage systems. Therefore, both the Preferred Project and the Rail Overcrossing Alternative would not require or result in construction of new storm water drainage facilities or expansion of facilities beyond the on-site improvements included as part of the Project. Therefore, this significance criterion is not applicable to the Project and is not discussed further.

- ***Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed.***

  During construction, City water supplies may be used for such activities as dust control and equipment cleaning. Construction-related water demands would be short-term and minimal in volume and would be sufficiently served by existing entitlements. Following construction, the proposed Project would not require potable water services beyond that associated with potential temporary irrigation of replacement trees at the Jennings Avenue site, which would be intermittent and minimal in volume and sufficiently served by existing entitlements. Therefore, new or expanded entitlements would not be needed for the Project. Therefore, this significance criterion is not applicable to the Project and is not discussed further.

3.13.5 Methodology

Potential impacts to utilities and service systems are evaluated for both construction and operational activities. The evaluation considers whether the Project would comply with the City's existing NPDES stormwater and wastewater permits, whether the City's wastewater and storm drain system would have the capacity to serve the Project, and potential environmental effects resulting from the Project. Compliance with federal, State and local statutes related to solid waste is also evaluated, as well as capacity of landfills to accept solid waste generated by the Project. The Santa Rosa General Plan, NPDES permits, and the Cal Recycle website were reviewed to identify permit requirements, the landfills that would potentially serve the Project, and applicable solid waste goals and policies.

3.13.6 Impacts and Mitigation Measures

Table 3.13-2 Summary of Impacts

Impact	Preferred Project: At-grade Rail Crossing w/ Rail Crossing Closure at W. Sixth St.	Preferred Project: At-grade Rail Crossing w/ Rail Crossing Closure at W. Seventh St.	Preferred Project: At-grade Rail Crossing w/ Rail Crossing Closure at W. Eighth St.	Rail Overcrossing Alternative
UT-1: Would the Project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, or result in a determination by the wastewater treatment provider which services the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	LSM	LSM	LSM	LSM
UT-2: Would the Project be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs, and will the Project comply with federal, State and local statutes and regulations related to solid waste?	LS	LS	LS	LS
UT-3: Would the Project result in potential damage to or temporary disruption of existing utilities during construction?	LS	LS	LS	LSM
UT-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to utilities?	LS	LS	LS	LS

Notes: LS = Less than Significant
LSM = Less than Significant with Mitigation

Impact: **UT-1: Would the Project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, or result in a determination by the wastewater treatment provider which services the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?**

Analysis: *Preferred Project – At-grade Rail Crossing (Significant)*

Rail Overcrossing Alternative (Significant)

Construction

Construction of the Preferred Project does not require particularly deep excavations (less than five feet); therefore it is possible that groundwater would not be encountered during construction. However, if groundwater dewatering were needed, the Preferred Project would dispose of the groundwater via the sewer, the storm drain, or into Steele Creek.

The preliminary design for the Rail Overcrossing Alternative would require excavations and drilling below the anticipated water table. As described in Section 2, Project Description, approximately 272,000 gallons of groundwater may need to be pumped for completion of foundations. Smaller quantities of groundwater may also need to be pumped and discharged during other site excavation and trenching activities associated with the Rail Overcrossing Alternative. The Rail Overcrossing Alternative would dispose of the groundwater via the sewer, storm drain, or into Steele Creek.

If discharged to the sanitary sewer, groundwater from excavation dewatering from either the Preferred Project or the Rail Overcrossing Alternative could affect treatment requirements and capacity of the Laguna Plant. Often, groundwater generated during dewatering activities is relatively clean, but contains elevated levels of sediment and turbidity. Although discharges of groundwater to the sanitary sewer would be short-term, depending on when such discharges occurred, they could temporarily affect treatment capacity of the Laguna Plant. Additionally, dewatered groundwater discharged to the sanitary sewer system would be subject to the City's One-time Wastewater Discharge Permit. If a permit were not obtained, the impact would be significant. Therefore, the construction-related impact of discharging groundwater to the sanitary sewer is considered significant.

Operation

Operation of the Preferred Project and the Rail Overcrossing Project would not generate wastewater or require wastewater service. Therefore, because there would be no increase in wastewater discharges, the Preferred Project and the Rail Overcrossing Alternative would not exceed wastewater treatment standards or exceed the Laguna Plant capacity to serve existing commitments. No operational impact would occur.

Mitigation: **Mitigation Measure HWQ-1: Manage Construction Dewatering *(Preferred Project and Rail Overcrossing Alternative)***

This mitigation measure is defined in Section 3.8, Hydrology and Water Quality.

After Mitigation: *Preferred Project – At-grade Rail Crossing (Less than Significant with Mitigation)*

Rail Overcrossing Alternative (Less than Significant with Mitigation)

Mitigation Measure HWQ-1 requires compliance with the City's one-time discharge permitting process for construction-related discharges of groundwater to the sanitary sewer. This permitting process sets discharge limitations on constituents and other substances and considers the estimated volume and duration of the discharge to ensure that it can be received by the sanitary sewer system and the Laguna Plant. Implementation of this mitigation measure would verify that discharge from the Preferred Project and the Rail Overcrossing Alternative are compliant with wastewater discharge requirements, and would ensure that the sanitary sewer system has the capacity to receive the discharge, thereby reducing the potential impact to a less-than-significant level.

Impact: **UT-2: Would the Project be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs, and will the Project comply with federal, State and local statutes and regulations related to solid waste?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

Construction

Construction of the Preferred Project and the Rail Overcrossing Alternative would result in a temporary increase in solid waste disposal needs associated with construction waste. Construction wastes would include solid waste from vegetation clearing, grading, tree removal, and street improvements, including demolished asphalt pavement and concrete. Excavated soils may be utilized for backfill at the Project sites or off-hauled with other construction debris for recycling or disposal as required by City and County regulations.

The Countywide Integrated Waste Management Plan has a goal of achieving a 70 percent diversion rate by 2015 (Santa Rosa 2009). The City of Santa Rosa General Plan Goal PSF-H, the North Santa Rosa Station Area Specific Plan Goal PF-6, and Downtown Santa Rosa Station Area Specific Plan Goal SP-UPS-4 promote solid waste reduction, reuse and recycling.

As described in Chapter 2, Project Description, any materials that could be salvaged, recycled or composted would be diverted from the landfill as required by State and County regulations for solid waste diversion. In addition, Project Measure 3, Implement Storm Water Control Measures during Construction, would implement waste management BMPs that would improve site and materials management of solid waste and concrete waste.

Materials with no practical potential for reuse would be disposed of at a regional landfill, such as the Central Disposal Site, Keller Canyon Landfill, Redwood Sanitary Landfill, and Potrero Hills Landfill (see Section 3.13.2 [Setting]). Any excavated soil found to contain unacceptable levels of hazardous contaminants would be hauled to a licensed disposal site. Solid waste generated during construction of the Preferred Project or the Rail Overcrossing Alternative would represent a small fraction of the daily permitted tonnage of these facilities. Therefore, the short-term solid waste disposal needs of both the Preferred Project and the Rail Overcrossing Alternative would be sufficiently accommodated by existing landfills, and the Project would be required to comply with applicable federal, state, and local statutes. Therefore, the construction-related impact would be less than significant.

Operation

Operation of the Preferred Project and the Rail Overcrossing Alternative would not generate solid waste. Therefore, because there would be no increase in solid waste generation, no operational impact would occur for both the Preferred Project and the Rail Overcrossing.

Mitigation: No mitigation is needed.

Impact: **UT-3: Would the Project result in potential damage to or temporary disruption of existing utilities?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Construction

The Preferred Project would extend existing electrical conduits to the official rail crossing warning devices, and to a new street lamp to be installed on the east side of the rail corridor.

Generally, trenching and excavation construction activities at Jennings Avenue and the W. Sixth Street, W. Seventh Street or W. Eighth Street could result in unintentional damage or interference with existing utilities, such as an existing SCWA high pressure aqueduct parallel to the rail corridor or various City pipelines connecting to the aqueduct. State regulation requires that USA North be notified prior to ground excavation, and that existing buried utilities are located, marked and digging clearance is given, before excavation can proceed. Additionally, as identified in Chapter 2, Project Description, the City would obtain an easement to excavate near the aqueduct if necessary. Because the City would be required to comply with utility notification requirements, the potential for trenching and excavation to damage or disrupt existing utilities would be minimized, and the impact would be less than significant.

Operation

Following construction, the Preferred Project would not damage or disrupt existing utilities because there would be no further trenching or excavation. No impact would occur.

Mitigation: No mitigation is needed.

Analysis: *Rail Overcrossing Alternative (Significant)*

Construction

Several existing utilities within Jennings Avenue and the rail corridor would need to be relocated to accommodate construction of the rail overcrossing. A 12-inch water main currently located within Jennings Avenue on the west side of the rail corridor would be abandoned, and a replacement water main would be constructed approximately seven feet to the north within Jennings Avenue. Two replacement water service connections would be installed to the relocated water main. A below-ground telephone fiberoptic cable within the SMART right-of-way, and a PG&E gas main across the SMART right-of-way would also need to be relocated. Additionally, a utility pole for overhead electrical and telephone service located on the west side of the rail corridor may need to be relocated to accommodate space for the rail overcrossing stairs.

The SCWA aqueduct located on the west side of and parallel to the rail corridor would not need to be moved; as identified in Chapter 2, Project Description, the City would obtain an easement to excavate near the aqueduct if necessary.

Trenching and excavation construction activities could result in unintentional damage or interference with existing utilities. State regulation requires that USA North be notified prior to ground excavation, and that existing buried utilities are

located, marked and digging clearance is given, before excavation can proceed. Because the City would be required to comply with utility notification requirements, the potential for trenching and excavation to damage or disrupt existing utilities would be minimized, and the impact would be less than significant.

Relocation of existing water, electrical and telephone utilities would require disconnection, replacement, and reconnection of affected utilities. Relocation and reconnection of existing utilities during construction could temporarily disrupt utility services, which would be a significant impact.

<u>Operation</u>

Following construction, the Rail Overcrossing Alternative would not damage or disrupt existing utilities because there would be no further trenching or excavation. No impact would occur.

Mitigation: **Mitigation Measure UT-1: Utility Relocation Coordination *(Rail Overcrossing Alternative)***

The City or its contractor(s) shall promptly notify utility providers to reconnect any disconnected utility lines as soon as it is safe to do so and shall coordinate final construction plans and specifications with affected utility providers.

After Mitigation: *Rail Overcrossing Alternative (Less than Significant with Mitigation)*

Mitigation Measure UT-1 would require appropriate coordination with utility providers during relocation of utility lines. With implementation of this mitigation measure, the impact to potential disruption of utility service during construction of the Rail Overcrossing Alternative would be reduced to a less-than-significant level.

3.13.7 Cumulative Impacts

Impact: **UT-C-1: Would the Project result in a cumulatively considerable contribution to cumulative impacts related to utilities?**

Analysis: *Preferred Project – At-grade Rail Crossing (Less than Significant)*

Rail Overcrossing Alternative (Less than Significant)

As described in more detail above, the Project may need to discharge groundwater from excavation dewatering to the sanitary sewer. It is possible that cumulative projects identified in Table 3-1, as well as other projects in the region served by the Laguna Plant, also would need to dewater to the Laguna Plant during construction. However, these discharges would be short-term and would be subject to the City's One Time Wastewater Discharge Permit. Because dewatering to the sanitary sewer is regulated by existing City policy, and a permit would not be issued if the Laguna Plant could not accept the discharge, the Project, together with other cumulative projects would not result in a significant cumulative impact related to exceedance of a wastewater treatment requirement.

With regard to landfill disposal needs, the Project would temporarily generate a very small amount of material for disposal during construction. This type of project is not the type of land use project (e.g., large new residential

development, or manufacturing or industrial uses) that would normally contribute to a cumulative impact. Given that disposal for the Project is small and short-term, the Project would not make a cumulatively considerable contribution to a significant cumulative impact relative to capacity at an existing landfill.

Finally, with regard to damage or disruption to existing utilities, this is a site-specific issue and would not accumulate as impacts on resources do. The Project would not contribute to a cumulative impact on utilities.

Mitigation: No mitigation is needed.

3.13.8 References

California Department of Resources, Recycling, and Recovery (Cal Recycle). 2012. *Solid Waste Facility Permit (Central Disposal Site)*. January 20.

Cal Recycle. 2013a. *Facility/Site Summary Details: Central Compost Site (49-AA-0260).* Website Accessed on December 20 at: http://www.calrecycle.ca.gov/SWFacilities/Directory/49-AA-0260/Detail/

Cal Recycle. 2013b. *Facility/Site Summary Details: Potrero Hills Landfill (48-AA-0075).* Website Accessed on December 20 at: http://www.calrecycle.ca.gov/SWFacilities/Directory/48-AA-0075/

Cal Recycle. 2013c. *Facility/Site Summary Details: Keller Canyon Landfill (07-AA-0032)*. Website Accessed on December 20 at: http://www.calrecycle.ca.gov/SWFacilities/Directory/07-AA-0032/

Cal Recycle. 2014. *Facility/Site Summary Details: Redwood Landfill (21-AA-0001).* Accessed on August 4, 2014 at: http://calrecycle.ca.gov/SWFacilities/Directory/21-AA-0001/Detail/

Keller Canyon Landfill. 2014. Personal Communication, Lochlin Caffey, January 14, 2014.

Laguna Treatment Plant. 2014. Personal Communication, Joe Schwall, Laguna Plant Operations Manager.

North Coast Regional Water Quality Control Board (NCRWQCB). 2006. *Order No. R1-2006-0045, Waste Discharge Requirements and Master Reclamation Permit for the Santa Rosa Subregional Water Reclamation System, NPDES No. CA0022764*

NCRWQCB. 2009a. *Order No. R1-2009-0050, Waste Discharge Requirements for the City of Santa Rosa, the County of Sonoma, and the Sonoma County Water Agency.*

NCRWQCB. 2009b. Order No. *R1-2009-0045, Waste Discharge Requirements for Low Threat Discharges to Surface Waters in the North Coast Region.*

Potrero Hills. 2014. Personal Communication, Landfill Attendant, January 14, 2014.

Santa Rosa, City of (Santa Rosa). 2009. *General Plan 2035 Environmental Impact Report.* March.

Santa Rosa. 2012. *North Santa Rosa Station Area Specific Plan Draft Environmental Impact Report.* April.

Santa Rosa. 2013. *Santa Rosa Groundwater Master Plan Final MND.* September 11.

Santa Rosa. 2014. *Water Reuse System.* Website Accessed August 1, 2014 at: http://ci.santa-rosa.ca.us/departments/utilities/treatment/Pages/default.aspx

Sonoma County Waste Management Agency (SCWMA). n.d. *Sonoma County's Central Disposal Site – A Model of Integrated Waste Management.*

SCWMA. 2013. *Waste Stream Profiles*. Website Accessed December 17, 2013 at http://www.recyclenow.org/agency/waste_stream_profiles.asp

Waste Management. 2013. *Redwood Landfill About Us*. Website Accessed on December 20, 2013 at: http://redwoodlandfill.wm.com/about-us/index.jsp

4. Alternatives Description and Analysis

4.1 Introduction

This chapter presents the alternatives analysis for the Project. CEQA and the CEQA Guidelines require that an EIR "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" (CEQA Guidelines Section 15126.6[a]). In addition, an EIR must identify alternatives that were considered by the lead agency and were rejected as infeasible during the scoping process and should briefly explain the reasons underlying the lead agency's determination (CEQA Guidelines Section 15126 [(c]).

One of the alternatives analyzed must be the "No Project" alternative. The "No Project" alternative is the circumstance under which the Project does not proceed. The EIR must also identify an environmentally superior alternative to the proposed project (Section 15126.6[e]).

4.2 Alternatives Considered but not Carried Forward in this EIR

During the preliminary planning of the Project and the scoping process for the EIR, several alternatives to the Project were evaluated and/or suggested. These alternatives are summarized below, and are evaluated to determine if they meet the qualifications for alternatives, as required under CEQA.

In accordance with CEQA requirements, an alternative must meet the following three criteria: 1) the alternative would attain most of a project's basic objectives; 2) the alternative would avoid or substantially reduce the significant environmental impacts of the proposed project; and 3) the alternative must be feasible. An EIR need not analyze an alternative whose impact cannot be reasonably ascertained and whose implementation is remote and speculative. Furthermore, an EIR need not consider every conceivable alternative, but must consider a reasonable range of alternatives that will foster well-informed decision-making and public participation.

4.2.1 Jennings Avenue Undercrossing

A rail undercrossing alternative was considered during the preliminary planning process for the Project, and was suggested as an alternative to the Project during the scoping period for this EIR. A rail undercrossing would consist of a grade-separated pedestrian and bicycle rail crossing at Jennings Avenue. Because the rail undercrossing would be grade-separated (i.e., would provide complete separation of the pedestrian/bicycle path and the rail corridor), this alternative would not require closure of an existing at-grade rail crossing elsewhere in the City.

A rail undercrossing alternative would meet the Project objectives, as it would establish a pedestrian and bicycle rail crossing linking the eastern and western segments of Jennings Avenue, would help establish Jennings Avenue as a future bike boulevard, and would establish connections between the proposed linear multi-use Sonoma-Marin Area Rail Transit (SMART) pathway along the creek and the overall pedestrian and bicycle network within the North Santa Rosa Station Area Plan. Because a rail undercrossing would not require the closure of a rail crossing elsewhere in the City, it would avoid significant impacts associated with a rail crossing closure.

A rail undercrossing alternative was analyzed during the preliminary planning process for the Project. The preliminary evaluation of this undercrossing included development of a conceptual design in accordance with applicable SMART Design Guidelines, California Public Utilities Commission (CPUC) requirements, and Americans with Disabilities Act code requirements, as well as industry standards for grade separations.

A rail undercrossing at Jennings Avenue would route bicycles and pedestrians through a reinforced concrete box that would extend under the rail corridor. A concern commonly associated with pedestrian undercrossings is that they present the appearance of not being a safe and secure route for pedestrians, due to being below grade and having poor visual sightlines. In order to alleviate this concern, the conceptual design of the rail undercrossing determined that the recently improved SMART rail corridor would have to be raised up to approximately 10 feet above the existing grade from Jennings Avenue to Guerneville Road. Raising the tracks in this manner would allow the pedestrian pathway to be kept to a maximum of approximately 2.5 feet below grade, and permit visual sightlines to extend through the undercrossing. Retaining walls would need to be extended between Jennings Avenue and Guerneville Road to retain fills. In addition, this alternative would require shifting of the proposed Guerneville Road station platform and associated tracks to maintain required slopes for the tracks. (STV Incorporated 2012)

The rail undercrossing would also introduce a low point in the vicinity of Steele Creek and could be subject to flooding. This alternative would require a drainage system to prevent standing water and flooding, and would likely include drains, a sump pump, and ongoing maintenance requirements. An existing underdrain system beneath the rail corridor would also need to be relocated under this alternative. (STV Incorporated 2012)

This alternative was deemed infeasible given the nature of the improvements that would be needed to the recently improved SMART rail lines between Jennings Avenue and Guerneville Road. Because the rail corridor is anticipated to be active for passenger and freight train service during the Project's construction process, the improvements needed to raise the recently improved SMART tracks would significantly impact the performance and safety of the SMART project, including extended interruption of service over the course of construction. The necessary grade changes for this alternative may also present an issue relative to compliance with the required Americans with Disabilities Act (ADA) path of travel for slope, cross slope, intermediate level landings, handrails, guardrails and other required access features. Therefore, consideration of this alternative is not evaluated further in this EIR.

4.2.2 Closure of a Different Existing Rail Crossing

During scoping, a request to the City was made for consideration of a rail crossing closure in a different area of the City that may have a lower nearby population than the West End neighborhood. As noted in Chapter 2, Project Description, CPUC staff has suggested that if an at-grade rail crossing is installed at Jennings Avenue, then the City would be required to close one or two other at-grade rail crossings within the City, so that the total number of permitted at-grade rail crossings in the City would stay the same or be reduced.

In response to the request for consideration of other rail crossing closures, the City reviewed the suitability of other rail crossings for closure that are located within the City between San Miguel Road to the north and Bellevue Avenue to the south. Of all of the rail crossings within the City, the three crossings with the least amount of vehicle traffic are W. Sixth Street, W. Seventh Street, and W. Eighth Street. These three rail crossings are also closer to one another than any other rail crossings in the City.

After W. Sixth, W. Seventh, and W. Eighth Street, Barham Avenue is the next least traveled crossing with an average daily traffic of nearly 4,000 vehicles per day, followed by San Miguel drive with approximately 5,500 vehicles per day. The nearest crossing to Barham Avenue is approximately 1,800 feet away (Sebastopol Road), while the nearest crossing to San Miguel Road is approximately 2,800 feet away (Piner Road). After reviewing taffic volumes and distances between rail crossings, it is apparent that closure of a rail crossing at either W. Sixth Street, W. Seventh Street, or W. Eighth Street would have the least amount of impact to the public. Therefore, other locations for a rail crossing closure are not evaluated further in this EIR.

4.2.3 No Closure of an Existing Crossing

During scoping, a commenter suggested the potential to use enhanced train controls and signal warnings approved for recent at-grade crossings in the City of Los Angeles and the City of Fremont that did not require closure of an existing crossing. Based on preliminary discussions of the Project with the CPUC, construction of an at-grade crossing at Jennings Avenue will require a closure of an at-grade crossing elsewhere within the City, namely at W. Sixth Street, W. Seventh Street, or W. Eighth Street. Therefore, this alternative was determined to be infeasible and is not evaluated further in this EIR.

4.2.4 Sliding Electric Gates

During scoping, a commenter suggested that an alternative to a rail crossing closure could be to install a sliding electric gate that would roll from each side of the roadway to center when a train was passing through the rail crossing. This alternative was evaluated, but would not conform to CPUC requirements. Therefore, this alternative was determined to be infeasible and is not evaluated further in this EIR.

4.3 Analysis of Alternatives

This section describes the project alternatives that were selected and analyzed in accordance with CEQA Guidelines Section 15126.6(a). As described above, several potential alternatives were evaluated, but were determined to be infeasible. Two alternatives are evaluated in this EIR: the Rail Overcrossing Alternative and the No Project Alternative. The Rail Overcrossing Alternative is evaluated at the same level of detail as the Preferred Project in the main body of the EIR. The No Project Alternative is evaluated below.

4.3.1 No Project Alternative

CEQA Guidelines Section 15126.6(e) requires that EIRs include an evaluation of the No Project Alternative to provide decision-makers the information necessary to compare the relative impacts of approving a project to not approving a project. The No Project Alternative is defined as a continuation of existing conditions, as well as conditions that are reasonably expected to occur in the event that a proposed project is not implemented.

CEQA Guidelines Section 15126(e)(2) provides that the analysis for the No Project Alternative should “discuss the existing conditions at the time the notice of preparation is published …, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.” Both scenarios are discussed below.

If the No Project Alternative results in conditions remaining the same as existing conditions at the time of the Notice of Preparation, then the unofficial crossing at Jennings Avenue would remain, no

rail crossing improvements would be made at the site, and no rail crossing closure at W. Sixth Street, W. Seventh Street, or W. Eighth Street would occur.

However, not implementing the Project would necessitate the placement of right-of-way fencing along either side of the rail corridor to prevent pedestrians from entering the rail corridor upon initiation of passenger rail service. Such barriers would be installed by SMART in order to eliminate existing hazards associated with pedestrian and bicycle safety at an unofficial crossing. Based on preliminary discussions with CPUC, such fencing would likely need to extend no less than 200 feet in each direction from the Jennings Avenue area to deter pedestrians from walking around the fence.

The No Project Alternative would conflict with Policy C-5.8 of the North Santa Rosa Station Area Specific Plan, which seeks to establish a pedestrian and bicycle crossing of the SMART rail corridor to link the eastern and western segments of Jennings Avenue. The No Project Alternative would also conflict with Policy C-3.4 of the North Station Area Specific Plan, which seeks to establish Jennings Avenue as a bike boulevard. Jennings Avenue is also identified as a future bicycle boulevard in the General Plan and the Bicycle and Pedestrian Master Plan. These conflicts with the North Santa Rosa Station Area Specific Plan, the General Plan, and the Bicycle and Pedestrian Master Plan would be a significant impact.

Pedestrians and bicyclists that would normally use the crossing under the Project would be forced to utilize other routes, such as N. Dutton Avenue, Guerneville Road, Range Avenue, the Sonoma County Water Agency trail, and other arterial streets. Such a re-route would add approximately three-quarters of a mile onto a bicycle and pedestrian trip seeking to cross the SMART rail corridor using Jennings Avenue. This additional trip length would generally result in five minutes of additional travel time for cyclists, and approximately 20 minutes of travel time for walking pedestrians. The increase in distance would exceed the established significance threshold of half a mile or 15 minutes, which is based on commonly-accepted maximum recommended safe walking distances to schools and professional judgment. With distances beyond this threshold, grade school-related walking trips would be expected to switch to use of a motor vehicle. The impact would be significant.

Based on the length of the re-routed trip and the nature of the traveled streets, this additional trip length could be enough to force a mode switch from pedestrian/bicycle to motor vehicle. Looking at the existing number of pedestrians and bicycles using the SMART rail crossing at Jennings Avenue, the greatest volume that might be forced into this modal shift during any particular analyzed peak period would be approximately 25 vehicles. Because the additional trip length is greater than the typical stated threshold at which grade school children will walk to school, the existing number of grade school related pedestrian trips was included with the calculation. Likewise, secondary and college related pedestrian trips were also included. Since these school trips were assumed to convert to “drop-off” motor vehicle trips, the sum of the existing school related pedestrian trips was doubled to account for round trips by those dropping off the students. Bicycle trips, of which the existing volume is negligible across the SMART rail corridor, were determined to not undergo a mode shift because the additional travel time does not surpass typical modal shift thresholds for bicycles.

These additional vehicles would be expected to be routed to the east-west roadways of Guerneville Road and College Avenue. Based on data from previous studies along Guerneville Road and College Avenue, an operational analysis for the AM peak hour was performed to verify the effect these additional trips will have upon the four intersections listed above. The addition of these

modal shift vehicles produces a negligible effect upon these intersections, and is summarized in Table 4-1 (Summary of No Project Alternative Peak Hour Level of Service [LOS]) below.

Table 4-1 Summary of No Project Alternative Peak Hour LOS

Intersection	Existing Conditions	No Project Alternative Conditions	Cumulative Conditions	Cumulative plus No Project Alternative Conditions
	Delay/LOS	Delay/LOS	Delay/LOS	Delay/LOS
Guerneville Road/North Dutton Avenue	45.2/D	45.3/D	**61.4/E**	**61.3/E**
Guerneville Road/Range Avenue	53.7/D	53.8/D	49.3/D	49.2/D
West College Avenue/North Dutton Avenue	29.7/C	32.6/C	32.1/C	35.7/D
College Avenue/Cleveland Avenue	24.0/C	24.4/C	25.9/C	27.1/C

Notes: *Italics* = results for minor movements at unsignalized intersections
Bold = results exceed acceptable level of service
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

Table 4-1 (Summary of No Project Alternative Peak Hour LOS) shows that the intersection of Guerneville Road and N. Dutton Avenue would be operating at unacceptable levels of service in the Cumulative Condition, causing some concern for the potential effect of any additional vehicles. However, the nature of traffic patterns at the intersection, and the small amount of additional vehicles under the No Project Alternative would result in a very small increase in delay.

While additional vehicles from the No Project Alternative would not be expected to have a significant effect upon the operation of intersections along Guerneville Road and College Avenue, this type of a mode shift is generally not desirable for the goals of a sustainable community and contradicts the City’s desire to emphasize providing alternatives to passenger cars.

4.4 Comparison of Alternatives

Table 4-2 (Comparison of Alternatives) compares the impacts of each of the three alternatives. Impact significance is shown in the table below as follows:

- No Impact (NI)
- Less-than-Significant Impact (LS)
- Less-than-Significant Impact after Mitigation Incorporated (LSM)
- Significant and Unavoidable Impact with No Feasible Mitigation Available (SU)
- Significant and Unavoidable after Mitigation Incorporated (SUM)

Table 4-2 Comparison of Alternatives

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	No Project Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
AES-1: Would the Project have a substantial adverse effect on a scenic vista?	LS	LS	LS	LS	NI
AES-2: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?	LSM	LSM	LSM	SU	LS
AES-3: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	LS	LS	LS	LS	NI
AES-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to cumulative impacts related to visual resources?	LS	LS	LS	LS	NI
AQ-1: Would the Project violate an air quality standard or result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	LS	LS	LS	LS	NI
AQ-2: Would the Project expose sensitive receptors to substantial pollutant concentrations?	LS	LS	LS	LSM	NI
AQ-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to cumulative impacts related to air quality?	LS	LS	LS	LS	NI

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	No Project Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
BIO-1: Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	LSM	LSM	LSM	LSM	NI
BIO-2: Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	LSM	LSM	LSM	LSM	NI
BIO-3: Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	LSM	LSM	LSM	LSM	NI
BIO-4: Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	LS	LS	LS	LS	NI
BIO-5: Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	LSM	LSM	LSM	LSM	LS

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	No Project Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
BIO-6: Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	LSM	LSM	LSM	LSM	NI
BIO-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to cumulative impacts related to biological resources?	LS	LS	LS	LS	NI
CR-1: Would the Project cause a substantial adverse change in the significance of an archaeological resource?	LSM	LSM	LSM	LSM	NI
CR-2: Would the Project cause a substantial adverse change in the significance of a historical resource?	LSM	LSM	SUM	LSM	NI
CR-3: Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	LS	LS	LS	LSM	NI
CR-4: Would the Project disturb any human remains, including those interred outside of formal cemeteries?	LSM	LSM	LSM	LSM	NI
CR-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to a cumulative impact?	LS	LS	LS	LS	NI

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	No Project Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
GEO-1: Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking or seismic-related ground failure, including liquefaction?	LS	LS	LS	LSM	NI
GEO-2: Would the Project result in substantial soil erosion or the loss of topsoil?	LS	LS	LS	LS	NI
GEO-3: Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in lateral spreading, subsidence, liquefaction or collapse?	LS	LS	LS	LSM	NI
GEO-4: Would the Project be located on expansive soil, creating substantial risks to life or property?	LS	LS	LS	LSM	NI
GEO-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to cumulative impacts related to geology and soils?	NI	NI	NI	NI	NI
GG-1: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	LSM	LS	LS	LS	NI
GG-2: Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	LSM	NI	NI	NI	NI

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	No Project Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
GG-C-1: Would the Project plus cumulative projects cause a cumulative considerable contribution to a significant cumulative impact relative to greenhouse gas emissions?	LSM	LS	LS	LS	NI
HAZ-1: Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	LS	LS	LS	LS	NI
HAZ-2: Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, or a known hazardous site, or would the Project create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	LSM	LSM	LSM	LSM	NI
HAZ-3: Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	LS	LS	LS	LS	NI
HAZ-C-1: Would the Project result in cumulative considerable contribution to a significant cumulative impact related to hazards or hazardous materials?	LS	LS	LS	LS	NI
HWQ-1: Would the Project violate any water quality standards or waste discharge requirements?	LSM	LSM	LSM	LSM	NI

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	No Project Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
HWQ-2: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or lowering of the local groundwater table level.	LS	LS	LS	LS	NI
HWQ-3: Would the Project provide substantial additional sources of polluted runoff or otherwise substantially degrade water quality?	LS	LS	LS	LSM	NI
HWQ-4: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site, or increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or exceed the capacity of existing or planned stormwater drainage systems?	LS	LS	LS	LS	NI
HWQ-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to cumulative impacts related to hydrology and water quality?	LS	LS	LS	LS	NI
LU-1: Would the Project physically divide an established community?	LS	LS	LS	LS	NI

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	No Project Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
LU-2: Would the Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	SU	SU	SU	NI	S
LU-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to cumulative impacts related to land use?	NI	NI	NI	NI	NI
NO-1: Would the Project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	SUM	SUM	SUM	LS	NI
NO-2: Would the Project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	LSM	LSM	LSM	LS	NI
NO-3: Would the Project result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	SUM	SUM	SUM	LS	NI
NO-4: Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	LSM	LSM	LSM	LSM	NI

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	No Project Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
NO-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to cumulative impacts related to noise?	SUM	SUM	SUM	LS	NI
PSR-1: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, and/or other public facilities?	LS	LS	LS	LS	NI
PSR-2: Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	LS	LS	LS	NI	NI
PSR-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to cumulative impacts related to public services and recreational resources?	LS	LS	LS	NI	NI
TR-1: Would the Project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the vehicular circulation system?	LSM	LSM	LSM	LSM	LS

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	No Project Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
TR-2: Would the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	LS	LS	LS	LS	NI
TR-3: Would the Project result in inadequate emergency access?	LSM	LSM	LSM	LSM	NI
TR-4: Would the Project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	LSM	LS	SU	NI	S
TR-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to cumulative impacts related to transportation?	LSM	LSM	LSM	LSM	LS
UT-1: Would the Project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, or result in a determination by the wastewater treatment provider which services the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	LSM	LSM	LSM	LSM	NI
UT-2: Would the Project be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs, and will the Project comply with federal, State and local statutes and regulations related to solid waste?	LS	LS	LS	LS	NI

Impact	Preferred Project: At-grade Rail Crossing			Rail Overcrossing Alternative	No Project Alternative
	w/ Rail Crossing Closure at W. Sixth St.	w/ Rail Crossing Closure at W. Seventh St.	w/ Rail Crossing Closure at W. Eighth St.		
UT-3: Would the Project result in potential damage to or temporary disruption of existing utilities?	LS	LS	LS	LSM	NI
UT-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to cumulative impacts related to utilities?	LS	LS	LS	LS	NI

Notes: NI = No Impact
LS = Less than Significant
LSM = Less than Significant with Mitigation
S = Significant
SU = Significant and Unavoidable
SUM = Significant and Unavoidable with Mitigation

4.5 References

Sonoma Marin Area Rail Transit (SMART). 2012. *Jennings Avenue Pedestrian Crossing Analysis for the SMART Project IOS-1 and IOS-1A*. October 5.

5. Other CEQA-required Sections

5.1 Effects Found Not to Be Significant

CEQA Guidelines Section 15128 requires an EIR to briefly describe any possible significant effects that were determined not to be significant and were, therefore, not discussed in detail in the EIR. For the purposes of this Draft EIR, an evaluation of agricultural and forest resources, mineral resources, and population and housing were eliminated from further evaluation in the scoping phase of the environmental analysis for the reasons presented below.

5.1.1 Agriculture and Forest Resources

The Project sites are not designated by the Farmland Mapping and Monitoring Program as Prime Farmland, Unique Farmland, or Farmland of Statewide importance. In addition, the Project sites are not designated by the California Department of Conservation as being under a Williamson Act contract, and are not located on land zoned or used for agricultural, forestland, or timberland. No impact to agriculture or forest resources would occur.

5.1.2 Mineral Resources

The City of Santa Rosa General Plan 2035 and regional mapping does not identify any State-designated (MRZ-2) or locally important mineral resource locations in the vicinity of the Project area. No impact to mineral resources would occur.

5.1.3 Population and Housing

The Project would not directly or indirectly induce population growth because it does not provide new housing, new employment, or expand existing infrastructure. Implementation of the Project would not displace existing housing units or residents, therefore, the construction of replacement housing would not be necessary, and no impact on existing population or housing would occur.

Potential impacts related to the implementation and buildout of the Downtown Station Area Specific Plan are evaluated in Section 3.9, Land Use and Planning.

5.2 Significant Unavoidable Effects

Section 21100(b)(2)(A) of CEQA and Section 15126.2 of the CEQA Guidelines require that an EIR identify any significant environmental effects that cannot be avoided if the Project were implemented, including those that can be mitigated but not reduced to a level of insignificance. Significant unavoidable Project and cumulative impacts identified in Chapter 3 of this EIR are identified in Table 5-1 below.

Table 5-1 Summary of Significant and Unavoidable Impacts

Impact	Preferred Project At-grade Rail Crossing w/ Rail Crossing Closure at W. Sixth St.	Preferred Project At-grade Rail Crossing w/ Rail Crossing Closure at W. Seventh St.	Preferred Project At-grade Rail Crossing w/ Rail Crossing Closure at W. Eighth St.	Rail Overcrossing Alternative
AES-2: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?	LSM	LSM	LSM	**SUM**
CR-2: Would the Project cause a substantial adverse change in the significance of a historical resource?	LSM	LSM	**SUM**	LSM
LU-2: Would the Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	**SU**	**SU**	**SU**	NI
NO-1: Would the Project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	**SUM**	**SUM**	**SUM**	LS
NO-3: Would the Project result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	**SUM**	**SUM**	**SUM**	LS
NO-C-1: Would the Project plus cumulative projects result in a cumulatively considerable contribution to cumulative impacts related to noise?	**SUM**	**SUM**	**SUM**	LS
TR-4: Would the Project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	LSM	LS	**SU**	NI

Notes: NI = No Impact
LS = Less than Significant
LSM = Less than Significant with Mitigation
SUM = Significant and Unavoidable with Mitigation
SU = Significant and Unavoidable

5.3 Significant Irreversible Environmental Changes

Section 21100(b)(2)(B) of CEQA requires that an EIR include a discussion of significant irreversible environmental changes that would result from project implementation. CEQA Guidelines Section 15126.2(c) describes irreversible environmental changes in the following manner:

"Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified."

Construction activities associated with the Project would result in an irretrievable and irreversible commitment of natural resources through the use of construction materials. The Project would require the commitment of energy resources to fuel and maintain construction equipment (such as gasoline, diesel and oil) during the construction period. Project construction would commit resources, such as concrete, to be used for the proposed improvements.

Following construction, operation of the Project would not result in any significant increase in dependence on non-renewable energy resources or in substantial increases in peak or base-period energy use.

5.4 Growth-Inducing Impacts of the Project

CEQA requires that an EIR evaluate the growth inducing impacts of a proposed Project. A growth-inducing impact is defined as follows:

"[T]he ways in which the proposed project could foster economic or population growth, or the construction of additional housing either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth" (CEQA Guidelines Section 15126.2[d]).

Projects are considered growth-inducing if they provide new housing, new employment, or expand existing infrastructure such as a wastewater treatment plant. The Project is designed to provide a CPUC-approved pedestrian and bicycle rail crossing at Jennings Avenue that would not include the above mentioned criteria. Therefore, the Project would not induce population growth.

5.5 Environmentally Superior Alternative

The CEQA Guidelines require the identification of an environmentally superior alternative to the proposed project (Section 15126.6[e]). If it is determined that the No Project Alternative would be the environmentally superior alternative, then the EIR shall also identify an environmentally superior alternative among the other Project alternatives (Section 15126.6[e][2]). For reference, significance is determined based on substantial or potentially substantial adverse changes of any of the physical environmental conditions due to the Project. The degree of change is evaluated against existing environmental conditions.

Even though the No Project Alternative would conflict with the General Plan, the North Santa Rosa Station Area Specific Plan, and the Bicycle and Pedestrian Master Plan because it precludes a bicycle boulevard on Jennings Avenue, as indicated in Impact LU-2 and Impact TR-4, it would be the Environmentally Superior Alternative in that it has the fewest significant impacts.

To determine the environmentally superior alternative among the other two alternatives, the following analysis is provided.

Preferred Project – At-grade Rail Crossing

The Preferred Project with a rail crossing closure at either W. Sixth Street, W. Seventh Street, or W. Eighth Street would result in significant and unavoidable impacts related to conflict with Downtown Station Area Specific Plan policies regarding improving pedestrian, bicycle and bus transit connections between surrounding areas and the Downtown SMART station (Impact LU-2). A primary purpose of the Downtown Station Area Specific Plan is to increase the number of residents and employees within walking distance of the proposed SMART Railroad Square station. The closure of any of the three rail crossings would not improve connections to the Downtown SMART station, the future SMART pathway in this area, or the general downtown area.

The Preferred Project with a rail crossing closure at either W. Sixth Street, W. Seventh Street, or W. Eighth Street would also result in significant and unavoidable operational and cumulative noise impacts related to the sounding of train horns associated with freight service and SMART trains. The impact resulting from the predicted existing plus Project noise level attributable to the sounding of freight train horns would be significant, because Project-generated noise levels would conflict with the Santa Rosa General Plan, as evaluated in Impact NO-1; and because Project-generated noise levels at noise-sensitive receptors are calculated to increase by more than 5 dBA DNL above existing background noise levels, as evaluated in Impact NO-3. In addition, the impact resulting from the predicted cumulative noise level attributable to the sounding of SMART train horns would be significant, and the Project's contribution to the significant impact would be cumulatively considerable, because Project-generated noise levels at noise-sensitive receptors are calculated to increase by substantially more than 5 dBA DNL above existing background noise levels, as evaluated in Impact NO-C-1.

The Preferred Project with a rail crossing closure at W. Eighth Street would result in the same significant and unavoidable land use and noise impacts as described above. Additionally, this alternative would have a significant and unavoidable impact on the overall historic connections between the potential North Railroad District and the northern section of the West End Preservation District, as indicated in Impact CR-2, and mitigation would not provide an equivalent connection. The significant connections between the residential component of the West End Preservation District and the commercial and industrial components of the potential North Railroad District and the Railroad Square Preservation District would be lost with closure of a rail crossing at W. Eighth Street. In addition, this alternative would disconnect the existing east-west Pedestrian Connector across the rail corridor at W. Eighth Street, and as a result, would significantly impact the livability of local neighborhoods and reduce the ease of biking or walking within the planning area (Impact TR-4). No feasible mitigation was determined to be available to reduce the conflict, as re-routing of the Pedestrian Connector to W. Ninth Street would no longer serve the same purpose as the connector on W. Eighth Street.

Rail Overcrossing Alternative

The Rail Overcrossing Alternative would result in a significant and unavoidable aesthetic impact related to the high visual contrast and impact of the visual character of the surrounding neighborhood, as evaluated in Impact AES-2. Given the constraints of the rail overcrossing location, it was not deemed feasible to change the placement and size of the overcrossing sufficiently to reduce the strong visual contrast and the impact on the visual character of the area,

and the impact of the overcrossing would remain significant and unavoidable even after the mitigation is implemented.

The Rail Overcrossing Alternative is the Environmentally Superior Alternative, in that it would result in three fewer significant and unavoidable impacts than the Preferred Project with a crossing closure at W. Sixth Street or W. Seventh Street, and five fewer significant and unavoidable impacts than the Preferred Project with a crossing closure at W. Eighth Street. Impacts to operational and cumulative noise impacts would not occur with a grade-separated rail overcrossing because the sounding of train horns associated with freight and passenger rail service would not be required. Additionally, the Rail Overcrossing Alternative would not require closure of an existing at-grade rail crossing elsewhere in the City.

5.6 Energy Resources

To guarantee that energy implications are considered in project decisions, Appendix F, Energy Conservation, in the CEQA Guidelines requires that EIRs *"include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy."*

This analysis evaluates the use of energy resources (e.g., fuel and electricity) associated with the construction and operation of the Project. For construction, the analysis considers whether construction activities would use large amounts of fuels or energy, and whether they would be used in a wasteful manner. For energy used during operation and maintenance, the analysis identifies the average annual increase in energy use that would occur with implementation of the Project to determine whether large amounts would be used and whether they would be used in a wasteful manner.

Construction of the Project would require the use of fossil fuels (primarily gas, diesel, and motor oil) for a variety of activities, excavation, grading, demolition, and vehicle travel. The precise amount of construction-related energy consumption is uncertain. However, construction would not require a large amount of fuel or energy usage because of the moderate number of construction vehicles and equipment, worker trips, and truck trips that would be required for a project of this scale (see Chapter 2, Project Description). In addition, equipment idling times would be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes or less (as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations [CCR]). Therefore, Project construction would not encourage activities that would result in the use of large amounts of fuel and energy in a wasteful manner.

Operation of the Project would not require the use of fossil fuels other than for periodic truck trips for maintenance visits, and would incorporate appropriate energy efficient lighting fixtures into the design of both the Preferred Project and the Rail Overcrossing Alternative. For example, the Rail Overcrossing Alternative would utilize recessed LED pathway lighting meeting the requirements of Title 24 of the California Code of Regulations for outdoor, non-residential lighting use and design. Therefore, operation of the Project would not use large amounts of energy and would not use it in a wasteful manner.

6. List of Preparers

GHD

Patricia Collins, Project Manager

Brian Bacciarini, Deputy Project Manger

Frank Penry, Senior Traffic Engineer

Kristine Gaspar, Senior Planner

Carrie Lukacic, Senior Scientist

David D. Davis, AICP, Senior Planner

Carol Kielusiak, Senior Planner

Chelsea Phlegar, Planner

Katherine Ross, Planner

Renee Remillard, Graphics

Elissa Overton, Project Administrator

Illingworth and Rodkin

Michael Thill

Joshua Carman

William Popenuck

Interactive Resources

Kimberly Butt

SSU-Anthropological Studies Center

Kyke Rabellino

Dr. Adrian Praetzellis

Jane Valerius Environmental Consulting

Jane Valerius

Wildlife Research Associates

Trish Tatarian

Kenneth Finger Consulting Paleontologist

Kenneth L. Finger, Ph.D.

Appendices

Appendix A

Notice of Preparation

Notice of Preparation and Notice of Scoping Meeting for an Environmental Impact Report for the Jennings Avenue Pedestrian and Bicycle Rail Crossing Project

Para la versión en español de este documento, por favor visite el siguiente sitio web de la Ciudad de Santa Rosa es el 12 de Noviembre at:
http://srcity.org/departments/communitydev/Pages/JenningsAvenuePedestrianandBicycleRailCrossingEIR.aspx

TO:	**Interested Parties**
SUBJECT:	**Notice of Preparation (NOP) of an Environmental Impact Report (EIR) and Notice of Scoping Meeting**
LEAD AGENCY:	**City of Santa Rosa**
NOP COMMENT PERIOD:	**November 12, 2013 to December 11, 2013**
SCOPING MEETING:	**6:00 PM Wednesday, December 4, 2013** Finley Center, Person Auditorium 2060 West College Avenue, Santa Rosa

The City of Santa Rosa (City) will be the Lead Agency for preparation of an EIR for the proposed Jennings Avenue Pedestrian and Bicycle Rail Crossing Project (Project). The EIR for the Project will be prepared by the City in accordance with the provisions of the California Environmental Quality Act (CEQA) and the CEQA Guidelines. The purpose of this NOP is to solicit guidance from responsible and trustee agencies and the general public as to the scope and content of the environmental information to be included in the EIR.

Jennings Avenue Pedestrian and Bicycle Rail Crossing Project

The City proposes improvements at an existing, unofficial at-grade pedestrian and bicycle rail crossing at Jennings Avenue to provide an official rail crossing. The proposed Jennings Avenue rail crossing is identified in the City's General Plan 2035, the Bicycle and Pedestrian Master Plan 2010, and in the recently adopted North Santa Rosa Station Area Specific Plan.

To construct a rail crossing at Jennings Avenue, the City would need to obtain permission from the California Public Utilities Commission (CPUC), the State agency that regulates railroads and rail transit. CPUC staff has suggested that Santa Rosa close one or two other rail crossings within the City, namely at Sixth, Seventh, or Eighth Streets, so that the total number of permitted rail crossings in the City would stay the same. Such a closure would be consistent with CPUC policy to reduce the number of rail crossings in general and is intended to support the efficient transit of trains through the City. Therefore, the City has decided to evaluate in the EIR the potential closure of one rail crossing at either Sixth, Seventh or Eighth Street, in the event that the CPUC would not approve a crossing at Jennings Avenue without a simultaneous closure of another crossing.

Project Location

Project components would be located in two areas of the City (see Figure 1). The proposed bicycle and pedestrian rail crossing would be located where Jennings Avenue approaches the SMART rail corridor. As described above, the Project may also need to include the closure of an existing rail crossing at either Sixth, Seventh, or Eighth Street, located just west of Wilson Street, approximately one mile southeast of the proposed crossing at Jennings Avenue.

Existing Conditions

The SMART rail corridor is currently active for freight rail service, though no set schedule exists in the Santa Rosa segment. SMART passenger train service is not currently in operation, but testing of trains is expected to begin in 2014, and service is expected to begin in 2016 in Santa Rosa.

Pedestrians and bicyclists currently cross the SMART rail corridor at Jennings Avenue, even though it is not a permitted crossing according to the CPUC. Existing railroad improvements at this location consist of raised ballast made of crushed stone supporting two sets of parallel railroad tracks. A waterway (Steele Creek) with riparian vegetation is located on the east side of the rail corridor between the tracks and Jennings Avenue. A Sonoma County Water Agency high pressure aqueduct (Santa Rosa Aqueduct) is located below ground parallel to the rail corridor on the west side.

Sixth, Seventh, and Eighth Streets currently provide at-grade crossings of the SMART rail corridor for vehicles, pedestrians and bicyclists. Sixth, Seventh, and Eighth streets are two-lane roads. Railroad improvements at these locations consist of track ballast supporting two sets of parallel railroad tracks. Standard railroad warning devices are in place at each vehicular crossing, but the warning devices are not currently active.

Project Description

The proposed Project includes construction and operation of an at-grade pedestrian and bicycle rail crossing at Jennings Avenue and the possible closure of an at-grade rail crossing at either Sixth, Seventh, or Eighth Street. Characteristics of both components are described below.

Pedestrian and Bicycle Rail Crossing at Jennings Avenue

Construction of an at-grade pedestrian and bicycle rail crossing at Jennings Avenue would include installation of crossing surfaces across the two sets of railroad tracks present at the site (see Figure 2). The conceptual design of the new crossing would comply with the Americans for Disabilities Act (ADA) and would include warning devices in compliance with federal and State regulations. Warning devices and pathway improvements at the site would include flashing light signal assemblies with automatic gate arms, warning signs, pedestrian gates, hand rails, paving, walkways, and fencing. Warning devices would indicate when a train is approaching and trigger the gate arms to block pedestrian access. Because the site consists of a double track, electronic signs would be installed to notify pedestrians if a second train is coming in close proximity to the first crossing. Exit swing gates would be provided to allow pedestrians to exit the track, if the gate arms are activated while a pedestrian is crossing.

The pathway leading to the crossing would be a minimum of eight feet wide with two foot shoulders on either side. On the west side of the rail corridor, the pathway would align with the northern sidewalk on Jennings

Avenue and would open to a portion of the street for bicycle traffic. On the east side of the rail corridor, the pathway would cross Steele Creek at the location of an existing storm drain box culvert. The pathway would then align with the northern sidewalk on Jennings Avenue on the east side of the rail corridor. A street lamp would be installed on the east side of the rail corridor at the northwest corner of Herbert Avenue and Jennings Avenue.

Closure of a Crossing at Sixth, Seventh, or Eighth Street

Closure of a rail crossing at Sixth, Seventh, or Eighth Street would include removal of existing crossing surfaces and installation of improvements to prevent access (see Figure 3). Roadway barricades, such as concrete barriers, guard rails or bollards, would be installed to prevent vehicular access. A chain link fence five to six feet in height may also be installed, if necessary, and extended approximately 100 feet to the north and south on each side of the rail corridor to prevent pedestrian and bicycle access.

Schedule

The expected schedule for the EIR is:

Scoping period	November 12, 2013 to December 11, 2013
Public scoping meeting	December 4, 2013
Draft EIR and public hearing	Spring 2014
Final EIR	Summer 2014
Consideration of EIR certification and Project approval	Fall 2014

Potential Environmental Effects

Because the City is preparing an EIR for this Project, an Initial Study was not prepared, as allowed by CEQA Guidelines Section 15060(d). The EIR will address the potential environmental impacts associated with the proposed Project. Specific areas of analysis will include:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Public Services
- Recreation
- Transportation
- Utilities and Service Systems

Environmental resource areas that are expected to be unaffected by the proposed Project include Agricultural Resources, Mineral Resources, and Population and Housing. Agricultural and forest resources will not be evaluated in the EIR, because the Project area does not include any farmland, forest, or land in Williamson Act contract, nor is any portion of the Project area zoned for agriculture or forestry (Santa Rosa General Plan 2035). Similarly, mineral resources will not be evaluated, because no mineral resources are present within the Project area (Santa Rosa General Plan 2035). Population and housing will not be evaluated, because the addition or closure of a rail crossing would not affect housing or population.

Scoping Period

The public comment period for scoping is from November 12, 2013 to December 11, 2013 at 5:00 pm. Written comments may be mailed, delivered, or emailed to:

City of Santa Rosa
Attn: Jessica Jones, Senior Planner
Community Development Department
100 Santa Rosa Avenue, Room 3
Santa Rosa, CA 95404
Email: jjones@srcity.org

Oral comments, as well as written comments, will be received at the public scoping meeting scheduled on December 4, 2013. The scoping meeting will begin at 6:00 pm with a 30-minute open house followed by a presentation providing an overview of the Project. After the presentation, attendees will be able to make oral comments and/or provide written comments. The scoping meeting will be held:

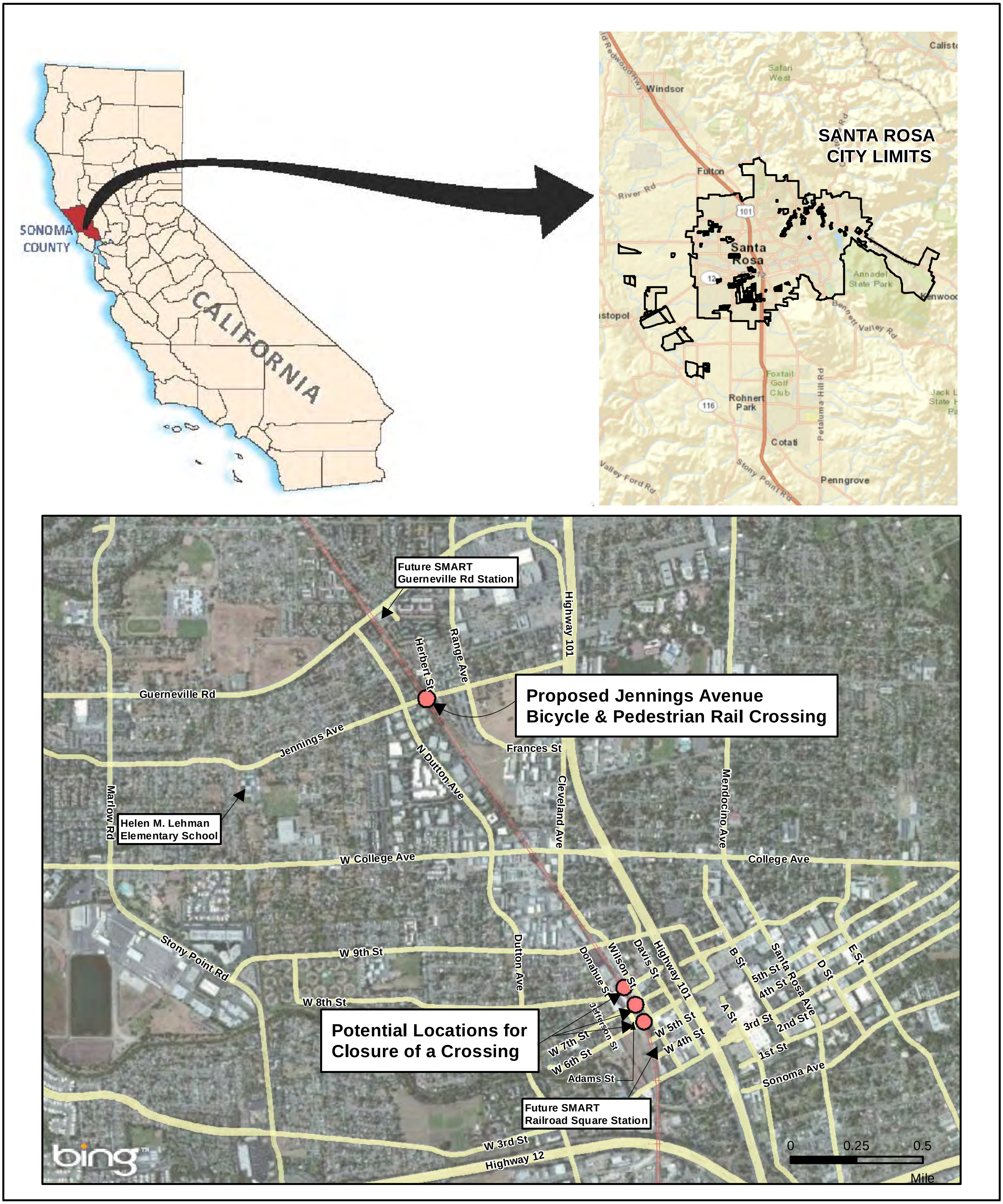
Wednesday, December 4th, 2013 at 6:00 pm
Finley Community Center, Person Auditorium
2060 West College Avenue, Santa Rosa

Responsible and Trustee Agencies

Due to the time limits mandated by State law, responses from responsible and trustee agencies to this NOP must be sent at the earliest possible date, but not later than 30 days after receipt of this notice. If a response is not received within 30 days, we will assume, in accordance with CEQA Guidelines section 15082(b)(2), that you have no response to this NOP.

Signed: Jessica Jones Date: 11-6-13

Jessica Jones, Senior Planner
Santa Rosa Community Development Department



Paper Size ANSI A

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere

N

City of Santa Rosa
Jennings Avenue Crossing EIR

Regional Map

Job Number	8410868
Revision	A
Date	31 Oct 2013

Figure 1

2235 Mercury Way, Santa Rosa, CA T 707-523-1010 F 707-527-8679 W www.ghd.com

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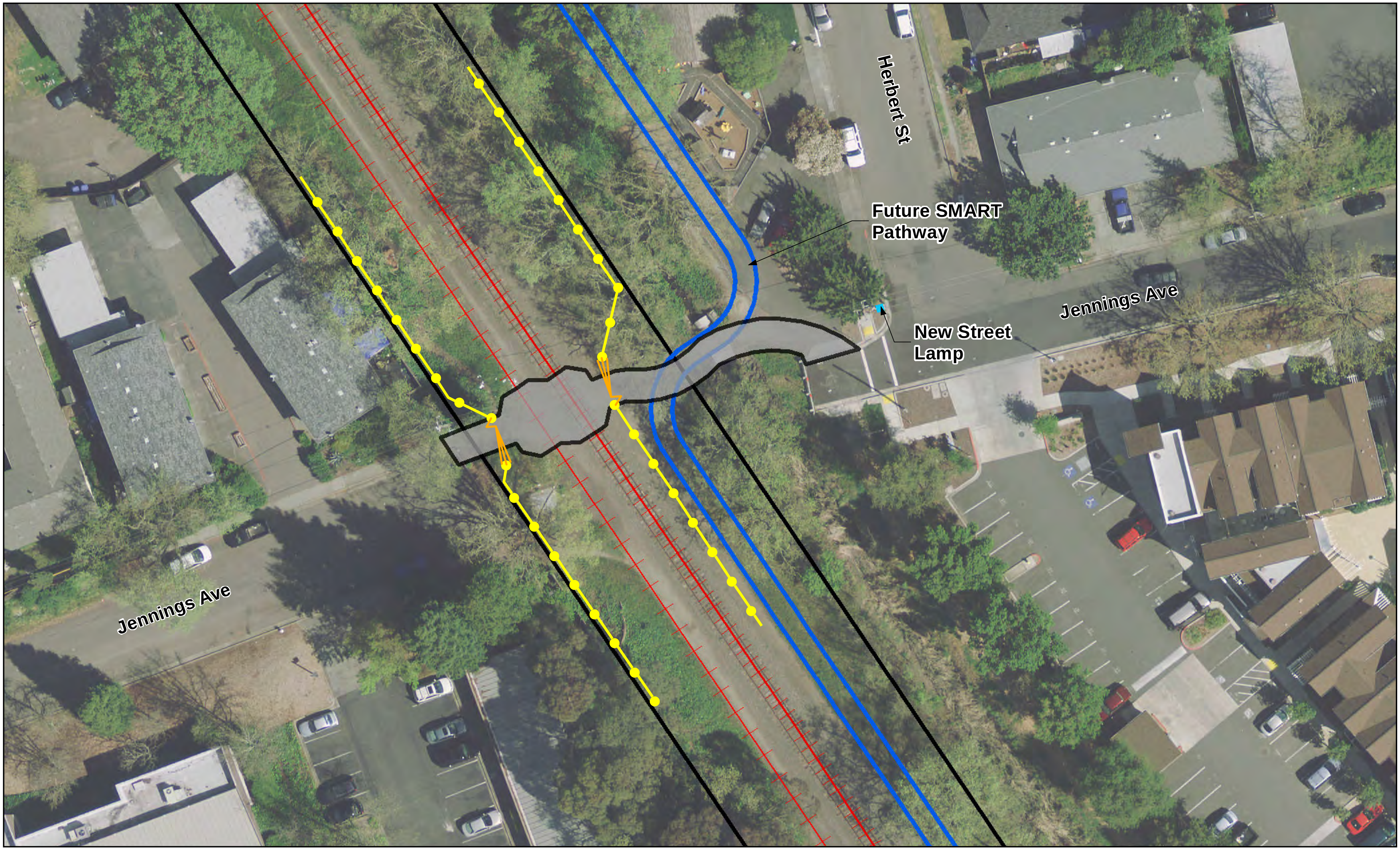

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

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LEGEND

- Fencing
- Conceptual Rail Crossing and Path
- Signal Arm
- Future SMART Pathway
- SMART Rail Corridor
- Siding Track
- Main Track
- New Street Lamp

GHD

City of Santa Rosa

City of Santa Rosa
Jennings Avenue Crossing EIR

Job Number 8410868
Revision A
Date 06 Nov 2013

Jennings Ave
Bicycle & Pedestrian Rail Crossing
Conceptual Design

Figure 2

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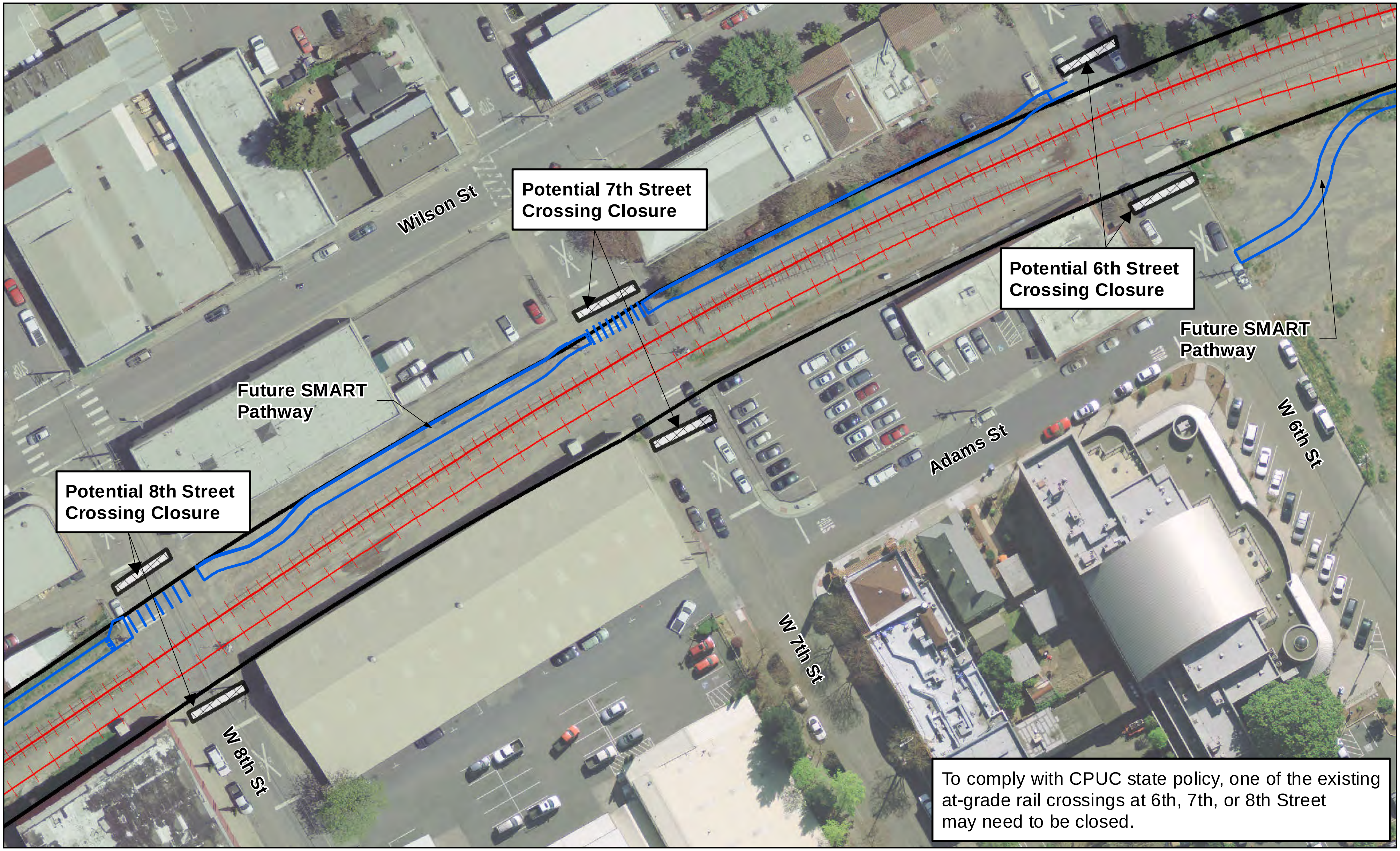
2235 Mercury Way Santa Rosa, CA 95407 T 707-523-1010 F 707-527-8679 W www.ghd.com

Data source: GHD 2013. Created by:cphlegar



Paper Size ANSI A

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

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LEGEND

- Road Barricades or Bollards
- SMART Rail Corridor
- Future SMART Pathway
- Siding Track
- Main Track

GHD | City of Santa Rosa

City of Santa Rosa
Jennings Avenue Crossing EIR

Job Number 8410868
Revision 1
Date 06 Nov 2013

Potential Alternative Locations for Closure of One Crossing

Figure 3

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2235 Mercury Way Santa Rosa, CA 95407 T 707-523-1010 F 707-527-8679 W www.ghd.com

Data source: GHD 2013. Created by:cphlegar

Appendix B

Scoping Summary Memorandum

Memorandum

23 December 2013

To	Jessica Jones, Nancy Adams, and Rob Sprinkle		
From	Pat Collins and Brian Bacciarini	Tel	(707) 523-1010
Subject	Jennings Avenue Pedestrian and Bicycle Rail Crossing Project EIR - Scoping Summary Memorandum	Job no.	8410868

This memorandum summarizes comments received during the EIR scoping period for the Jennings Avenue Pedestrian and Bicycle Rail Crossing Project EIR.

Scoping Period

The 30-day EIR scoping period began November 12, 2013, and ended December 11, 2013. Prior to the scoping period, a Notice of Preparation and Notice of Scoping Meeting were circulated to approximately 1,600 interested parties, including the State Clearinghouse, Responsible and Trustee Agencies, and owners and occupants located within 1,000 feet of the project area. Mailing lists are included in Appendix A. The State Clearinghouse number assigned to the EIR is 2013112019.

Scoping Comments

During the 30-day scoping period, approximately 50 written comments (via mail, email, and at the scoping meeting) were received. Table 1 on the following page lists the agencies, organizations, and individuals from whom letters were received. Written letters received are included in Appendix B.

A public scoping meeting was held on Wednesday, December 4, 2013, between 6:00 pm and 8:30 pm at the Finley Community Center, Person Auditorium, at 2060 West College Avenue. Approximately 51 people attended the meeting, 26 of whom provided oral comments. In a few instances, individuals spoke more than once. The scoping meeting sign-in sheet is included in Appendix C.

GHD Inc.
2235 Mercury Way Suite 150 Santa Rosa CA 95407 USA
T 1 707 523 1010 **F** 1 707 527 8679 **E** santarosa@ghd.com **W** www.ghd.com

Table 1 Written Scoping Comments Received

Agency/Organization	Individual, Title	Date Received
Letters from State Agencies		
California Public Utilities Commission (CPUC)	David Stewart, Utilities Engineer	December 10, 2013
California Office of Planning and Research (State Clearinghouse)	Scott Morgan, Director	December 10, 2013
Letters from Organizations/Petitions		
Assistance League of Sonoma County	Sandra Stone, President	December 3, 2013
Jennings Neighborhood Petition	Janet Barocco (63 signatures)[1]	December 11, 2013
“Build a Bridge” Comments/Petition	Allen Thomas (51 signatures with comments)[1]	December 11, 2013
Sonoma County Bicycle Coalition	Gary Helfrich	December 11, 2013
Bike Partners.Net	Geoffrey D. Smith	December 11, 2013
Historic Railroad Square Association Board	Lynda Angell, President	December 11, 2013
Letters/Emails from Individuals		
	Stacia Okura	November 10, 2013 November 12, 2013
	Allen Thomas	November 12, 2013 November 13, 2013 November 26, 2013 December 5, 2013 December 11, 2013
	Noel Quinn	November 21, 2013
	Janet Barocco	December 1, 2013 December 2, 2013
	Sandra Stone	December 3, 2013
	Gilberto R.	December 6, 2013

[1] The petitions were not checked for duplicate signatures.

Agency/Organization	Individual, Title	Date Received
	Hody Wilson	December 10, 2013
	Justin and Eryn Whitaker	December 10, 2013
	Kerry Rego	December 10, 2013
	Rosa Lara	December 10, 2013
	Michael McGinnis	December 10, 2013
	Carol Ciavonne	December 10, 2013
	Terrie Noll	December 10, 2013
	Ben Taylor	December 11, 2013
	Betsy Hall	December 11, 2013
	Carol Dean	December 11, 2013
	Jim Duncan and Johanna James	December 11, 2013
	Judy Kennedy	December 11, 2013
	Kevin Pyrne	December 11, 2013
	Stan Gow	December 11, 2013
	Laura Winkelbauer	December 11, 2013
	Lea Barron-Thomas	December 11, 2013
	Mike Montague	December 11, 2013
	Rebecca McGinnis	December 11, 2013
	Richard Deringer	December 11, 2013 December 15, 2013
	Susan Hayes	December 12, 2013
Written Comments Received at Scoping Meeting		
	Maria Riura	December 4, 2013
	Rafael Solano	December 4, 2013
	Richard Heinberg	December 4, 2013
	Martha Solano	December 4, 2013
	Sandra Stone	December 4, 2013

Agency/Organization	Individual, Title	Date Received
	Deborah Crippen	December 4, 2013
	Hody Wilson	December 4, 2013
	Jack Sweareagen	December 4, 2013
	Pablo Ortiz	December 4, 2013

SUMMARY OF COMMENTS

Scoping comments are summarized by EIR topic below. Comments received at the scoping meeting are summarized separately from written comments.

Aesthetics

Scoping Meeting

One commenter suggested that there may be ways to make a rail crossing closure more aesthetically pleasing than what is currently planned, suggesting the use of local artists. Another commenter wrote that if a closure is needed, it should incorporate aesthetic elements such as landscaping trees, shrubs, and grasses.

Written Comments

One commenter expressed concern that an overcrossing at Jennings Avenue would result in the potential for graffiti and potential visual impacts to adjoining properties. Several commenters suggested that a rail crossing at Jennings could improve aesthetics by potentially discouraging littering and transient camps in the area.

Several commenters expressed concern that road barricades and fencing associated with a rail crossing closure would adversely change the aesthetics of the West End neighborhood. One commenter expressed concern about the use of chain link fencing, asking whether the use of such fencing would conform to the Downtown Station Area Specific Plan and the existing visual character of the West End and Wilson Street corridor. One commenter expressed concern that a rail crossing closure would create a dead end that attracts potential graffiti. Commenters also expressed concern about the visual impact of dividing a portion of the West End neighborhood from Railroad Square.

Air Quality

Scoping Meeting

No comments.

Written Comments

Commenters expressed concern that a rail crossing closure could result in air quality impacts to residential areas due to increased traffic congestion and potential re-routing of trucks through the West End neighborhood. Commenters also expressed concern about the cumulative effect of additional vehicular emissions from a rail crossing closure combined with asphalt plant particulates.

Biological Resources

Scoping Meeting

No comments.

Written Comments

No comments.

Cultural Resources

Scoping Meeting

One commenter expressed concern that closing a rail crossing could adversely affect the West End Preservation District and Railroad Square Historic District.

Written Comments

Several commenters expressed concerned that closure of a rail crossing could change the character and historic status of the West End Preservation District and Railroad Square Historic District. The President of the Historic Railroad Square Association Board stated that narrow streets and the existing grid pattern are important elements to the integrity of the Railroad Square Historic District that should be preserved. One commenter expressed concern that closure of a rail crossing could change the character and historic status of the DeTurk Round Barn.

Geology and Soils

Scoping Meeting

No comments.

Written Comments

No comments.

Greenhouse Gas Emissions

Scoping Meeting

One commenter expressed concern that the No Project Alternative could result in additional car trips in the Jennings Avenue area, and that the EIR should evaluate the potential for increased carbon emissions if a rail crossing was not installed.

Written Comments

Several commenters expressed concern that a rail crossing closure could result in increased greenhouse gas emissions due to increased traffic congestion and decreased road connectivity.

Several commenters expressed that a pedestrian/bicycle crossing at Jennings Avenue would encourage car-free transportation and help reduce greenhouse gas emissions.

Hazards and Hazardous Materials

Scoping Meeting

No comments.

Written Comments

One commenter expressed concern that a rail crossing closure on W. Sixth Street could result in the disturbance and potential transport of known hazardous materials from an existing contaminated site. The commenter notes that the Downtown Station Area Specific Plan identifies the contaminated site as being located at 20 W. Sixth Street. The commenter is concerned that encountering contaminated materials could result in impacts to the surrounding neighborhood.

Hydrology and Water Quality

Scoping Meeting

No comments.

Written Comments

No comments.

Land Use

Scoping Meeting

Commenters expressed concern that closing a rail crossing would further divide the West End neighborhood from Railroad Square and Downtown Santa Rosa. One commenter questioned whether a rail crossing closure on W. Sixth Street might preclude the City from being able to provide the amount of housing called for in the Downtown Station Area Specific Plan.

Written Comments

Commenters expressed concern that closing a rail crossing would further divide the West End neighborhood from Railroad Square and Downtown Santa Rosa.

Several commenters asked how the General Plan and Downtown Station Area Specific Plan would need to be modified if a rail crossing were closed. One commenter noted that that closure of a rail crossing would conflict with certain General Plan and Downtown Station Area Specific Plan policies, including SP-T-2.1. The commenter also noted that the Downtown Station Area Specific Plan designates W. Eighth Street as a multi-use corridor, which could be impacted if the rail crossing was closed, including the overall connectivity of the specific plan area. One commenter asked how a rail crossing closure would affect assumptions made in previous EIRs, such as the Downtown Station Area Plan EIR, and whether the findings in the EIRs would need to be revised.

A commenter expressed concern that a rail crossing closure at W. Eighth Street would impact pending development projects on Donahue Street, including a DeTurk Round Barn Community Center and a tentative map for a Railroad Square Village subdivision. Commenters also requested that the Project EIR study the effects of the Project and crossing closure on the potential for development of high-density, mixed-use residential/commercial projects along the SMART corridor in the vicinity of Railroad Square, Jennings Avenue, and areas in-between.

One commenter asked that the cumulative analysis consider previous disconnections between the West End neighborhood and the Downtown area, including Highway 101 and the plaza mall.

Noise

Scoping Meeting

No comments.

Written Comments

One commenter expressed concern that a rail crossing closure would increase traffic-related noise on residential streets in the West End neighborhood.

Public Services and Recreation

Scoping Meeting

Commenters expressed concern that a rail crossing closure would create a dead end within the West End neighborhood that will attract homeless people and crime. Other commenters expressed hope that a crossing at Jennings Avenue and train service would eliminate homeless encampments in the area.

Written Comments

Commenters expressed concern that a rail crossing closure would create a dead end within the West End neighborhood that will attract homeless people and crime and effect public safety.

Transportation

Scoping Meeting

Rail Crossing at Jennings Avenue

Several commenters expressed that the Jennings Avenue area needs improved circulation, especially for children. One commenter expressed concern that without a rail crossing at Jennings Avenue, students and residents would have to walk up to Guerneville Road to access schools, parks, the SMART path, and businesses, which takes more time and is less safe.

Several commenters expressed concern about the safety of an at-grade crossing at Jennings Avenue, suggesting that an overcrossing would be safer for pedestrians and bicyclists, especially school children. Commenters also expressed concern that children may attempt to cut across the rail corridor at Jennings Avenue if the crossing is closed.

One commenter expressed concern that an overcrossing at Jennings Avenue would be difficult and dangerous for children and elderly to cross. One commenter expressed concern about how an overcrossing would integrate with the SMART pathway.

Rail Crossing Closure

Commenters expressed concern that closure of a rail crossing would increase traffic elsewhere in the area causing congestion, especially once train service begins and at build-out of applicable plans. Several commenters expressed concern that closure of a rail crossing would have adverse impacts on the connectivity of streets in the West End neighborhood to Railroad Square and Downtown Santa Rosa.

Commenters expressed concern that a rail crossing closure could adversely affect businesses and tourism in Railroad Square. Several commenters expressed concern that a rail crossing closure would adversely impact the ability for delivery trucks to access businesses in the area, including the Franco American Bakery and the Western Farm Center, potentially resulting in the loss of the businesses.

Several commenters expressed concern that a rail crossing closure would adversely affect emergency response times to the West End neighborhood.

One commenter expressed concern that a rail crossing closure at W. Sixth Street would result in trucks utilizing the Pierson Street bridge, asking if the bridge was constructed to support such trucks.

Written Comments

Safety

Several commenters expressed concern about the safety of an at-grade crossing at Jennings Avenue. Several commenters suggested that an overcrossing would be safer for pedestrians and bicyclists, especially for school children. Several commenters also expressed concern about the adequacy of a gate at Jennings Avenue to prevent pedestrians, especially children, from entering the crossing when a train is approaching. One commenter said that an at-grade ADA compliant railroad crossing is the safest way for pedestrians and cyclists of all physical capabilities and ages to cross the railroad tracks.

The California Public Utilities Commission noted that the EIR should include review of fencing and channelization, noting that grade separations frequently remain unused if at-grade routes are not properly blocked from use.

One commenter expressed concern that a rail crossing closure at W. Eighth Street would force Western Farm Center to close one of its driveways, which could potentially cause cut-through traffic in the parking area and create safety issues for customers.

Congestion

Several commenters expressed concern that closure of a rail crossing would increase traffic elsewhere in the area causing traffic congestion. One commenter expressed concern that closure of a rail crossing on W. Seventh Street would force more delivery trucks to use W. Sixth Street, which may result in increased congestion. Commenters also expressed concern that future development will increase traffic on Pierson Street and other residential West End streets, which might worsen congestion in the event of a rail crossing closure. Commenters expressed concern about cumulative traffic conditions in the Railroad Square area due to additional traffic from future development, SMART station traffic, and SMART shuttles.

One commenter stated that peak auto use on W. Seventh and W. Sixth Streets is on Fridays and Saturdays between 4:00 pm and 7:00 pm. The commenter requested that the EIR evaluate potential impacts from a rail crossing closure during this period. The commenter was concerned that cumulative traffic from the new SMART station and other future housing developments along with re-routed traffic from a rail closure at W. Seventh Street might require a traffic signal at W. Sixth Street and Wilson. Another commenter requested that the EIR evaluate potential impacts from re-routed traffic that may use Pierson Street.

One commenter suggested that the City prepare a Master Plan for the West End neighborhood that takes into account current and future uses, traffic circulation, bus circulation, shuttles and the effect of the commuter rail activity on the neighborhood.

Emergency Services

Several commenters expressed concern that a rail crossing closure would adversely affect emergency response times. One commenter asked how emergency vehicles would access the West End neighborhood, including Madison, Pierson, and Jefferson streets, if W. Seventh Street were closed, and if W. Sixth Street were blocked during an emergency, such as by a disabled train or during an emergency such as an earthquake. One commenter expressed concern that neighborhood streets are too narrow to be rerouting emergency traffic if a rail crossing was closed.

Connectivity

Several commenters expressed concern regarding how closure of a rail crossing would affect connectivity within the City. Commenters expressed concern that closure of a rail crossing would have adverse impacts on the connectivity of streets in the West End neighborhood to Railroad Square and Downtown Santa Rosa. Commenters expressed concern that a rail closure at W. Sixth Street would undermine the recent freeway underpass that improved access to and from downtown Santa Rosa.

One commenter stated that a tentative map for housing on W. Eighth and Ninth Streets will create hundreds of new daily trips, and if W. Eighth Street were closed, such trips would be forced into the local West End neighborhood, thereby affecting the walkability and parking availability of the neighborhood, causing circulation and safety issues. The commenter also expressed concern that a rail crossing closure would impact the flow of pedestrians and traffic from proposed housing in the area to the downtown SMART station.

One commenter expressed concern that the West End neighborhood contains several busy roads and needs to retain all of the existing ingress and egress options, especially to the east.

Businesses and Parking

Several commenters expressed concern that a rail crossing closure would adversely impact the ability for delivery trucks to access businesses in the area, including the Franco American Bakery and Western Farm Center. One commenter noted that if a rail crossing closure occurred at W. Seventh Street, Western Farm Center would still have numerous access routes into its parking lot, and deliveries to and from the Franco American Bakery could still occur.

A few commenters expressed concern that a rail crossing closure could result in a lack of parking that would affect traffic flow and businesses. Commenters specifically mentioned high-traffic facilities such as the Sixth Street Playhouse, Chops Teen Club, Western Farm Center, Stark's Steakhouse, and Arlene Francis Center. One commenter expressed concern that closure of a rail crossing at W. Eighth Street would affect the availability of a parking lot used for larger events at the DeTurk Round Barn. One commenter also expressed concern that a rail crossing closure could result in the re-routing of commercial traffic to non-commercial neighborhood streets.

Public Transit, Bicycle, and Pedestrian Facilities

Several commenters expressed the need for a rail crossing at Jennings Avenue to allow for a safe passageway for the biking community and pedestrians, especially school children. Commenters noted that a rail crossing at Jennings Avenue would help connect the neighborhoods and reduce vehicular transportation. Commenters expressed concern that without a rail crossing at Jennings Avenue, students living east of the tracks would be driven to school instead of walking or bicycling.

One commenter expressed concern about pedestrian and bicycle traffic being diverted to Guerneville Road if the Jennings Avenue crossing is fenced off by SMART. The commenter said that the Jennings Avenue crossing provides a vital link for the neighborhood including Helen M. Lehman Elementary School, Santa Rosa Business Park, G & G Shopping Center, other commercial areas west of the rail, and bus stops on North Dutton Avenue.

Commenters expressed concern that an overcrossing at Jennings Avenue would result in accessibility issues, unanticipated safety risks, and would hinder desired pedestrian and bicycle use and questioned how an overcrossing would integrate with the SMART pathway.

One commenter expressed concern that a rail crossing closure on W. Eighth Street would impact the City bus stop on Wilson Street and Eighth Street. One commenter expressed concern that closure of a rail crossing at W. Seventh Street would affect the safety of teens that use a bus stop at W. Seventh and Wilson. The commenter noted that the bus stop was moved from its previous location near W. Sixth Street so that teenagers would not have to exit the bus near the Redwood Gospel Mission, an area with a high concentration of homeless.

One commenter expressed concern regarding pedestrian, bicycle, and vehicle circulation for future transit-oriented development at Third, Fourth, Fifth, and Sixth street railroad crossings and Railroad Square. One commenter also expressed concern that a rail crossing closure could reduce train usage because of reduced access to the SMART pathway and downtown SMART station.

Several commenters expressed concern that a rail crossing closure would affect the performance of bicycle and pedestrian circulation in the West End neighborhood. Commenters expressed concern that closing a rail crossing would discourage use of the planned SMART pathway, and increase vehicular traffic on Pierson Street, which is part of the Greenway path.

Commenters expressed concern that a rail crossing closure would limit accessibility to businesses and cultural facilities, current bike paths, and planned bike boulevards, making these land uses more difficult to access. Specific facilities mentioned include the DeMeo Park, DeTurk Round Barn Park, West End Farmers Market, a potential Sixth Street Park, the Chops Teen Center, and other businesses.

Commenters expressed the concern that a rail crossing closure would force bicyclists and pedestrians in the West End neighborhood to take longer and less safe routes to cross the railway and could negatively affect the ability of children to walk or bike to the Kid's Street Learning Center, located at Davis and Eighth Street on the east side of Wilson. Another concern was how increased levels of traffic could be a safety hazard for children and cyclists. One commenter expressed concern that a rail crossing closure at W. Seventh Street could result in increased traffic on W. Sixth Street, which may impact the creation of a bike boulevard on W. Sixth Street, and the safety of pedestrians and bicyclists using W. Sixth Street and the SMART pathway.

Commenters expressed concern that a rail crossing closure at W. Eighth Street would force Western Farm Center to close one of its driveways, which may create a pedestrian blockage.

Conflict with Circulation Policies in Adopted Plans

Commenters expressed concern about the consistency of a potential rail crossing closure with existing plans, including the Bicycle and Pedestrian Master Plan, Creek Master Plan, and Downtown Station Area Specific Plan. Commenters expressed concern about how a crossing closure would affect:

- The proposed Sixth Street bicycle boulevard identified as the fourth highest priority in the Bicycle and Pedestrian Master Plan;
- The connectivity and importance of Sixth, Seventh, and Eighth Street connections as shown in Figure 2-9 of the Downtown Station Area Specific Plan;
- Designation of Sixth Street as a “key street” in the Downtown Station Area Specific Plan for both shop front and neighborhood types, designation of Sixth Street as a Transitional/Collector street (Figure 6-1), and impacts to these classifications in the Downtown Station Area Specific Plan;
- Identification of Eighth Street as an existing pedestrian connector as shown in Figure 5-2 of the Downtown Station Area Specific Plan and impacts to these classifications in the plan;
- Potential development and circulation patterns around the cannery and SMART development area as outlined in the Downtown Station Area Specific Plan;
- Consistency with the Santa Rosa Creek Master Plan, specifically the designation of Seventh Street as part of the SMART bike path and as a connector to Jefferson Street, Sixth Street, and the Santa Rosa Creek Path.

Utilities

Scoping Meeting

No comments.

Written Comments

One commenter expressed concern that a rail crossing closure could affect existing City and franchise utilities, and perhaps limit or eliminate future services to the area.

Population and Housing

Scoping Meeting

Several commenters requested that the EIR include an evaluation of population and housing to determine if a rail crossing closure would adversely affect planned housing in the Downtown Station Area Specific Plan.

Written Comments

Several commenters requested that the EIR include an evaluation of population and housing. Several commenters expressed concern that a rail crossing closure could have adverse effects on development projects, such as the DeTurk Winery Village, West Village, and future mixed use development of the Wilson Street Corridor and the SMART development area as outlined in the Downtown Station Area Specific Plan.

One commenter requested that the EIR analyze the potential for a rail crossing closure to result in a decrease in high density housing opportunity sites in the City. The commenter is concerned that closing W. Sixth Street could result in a potential loss of housing at the SMART site, and questions whether the closure would prevent buildout of the General Plan.

Another commenter expressed concern that closure of a rail crossing would affect the ability to create needed housing in the area. Specifically, the commenter noted that the number of housing units planned at the site of the existing Western Farm Center would be affected, and that a closure at W. Eighth Street would also affect the viability of a planned West End Village housing project.

Alternatives

Suggested alternatives included:

1. Many commenters suggested a grade-separated crossing to take pedestrians over or under the railroad tracks at Jennings Avenue, including a pre-fabricated bridge.

2. Closure of a rail crossing in a different area of the City with lower surrounding population.

3. Use of enhanced train controls and signal warnings approved for recent at-grade crossings in Los Angeles and Fremont that did not require closure of an existing crossing.

4. The use of 5-foot tall sliding electric gates that roll from each side to center when a train is passing through (as opposed to a rail crossing).

Commenters requested that potential impacts that could occur from closing the Jennings Avenue crossing (No Project Alternative) be evaluated.

Appendix C

Construction Health Risk Assessment

JENNINGS AVENUE PEDESTRIAN AND BICYCLE RAIL CROSSING PROJECT CONSTRUCTION COMMUNITY RISK ASSESSMENT SANTA ROSA, CALIFORNIA

August 5, 2014

♦ ♦ ♦

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INTRODUCTION

The purpose of this report is to address community health risk from impacts associated with construction of the proposed Jennings Avenue Bicycle and Pedestrian Rail Crossing Project. The project includes two alternatives: The Preferred Project would consist of an at-grade pedestrian and bicycle rail crossing at Jennings Avenue. As part of the Preferred Project, the City has included the potential closure of one rail crossing at either W. Sixth, W. Seventh or W. Eighth Street. However, due to the relatively short construction duration (up to two weeks) and small disturbance area (less than 0.2 acre) of such a closure, the potential construction-related impacts from a rail crossing closure are not analyzed through refined construction health risk modeling in this report. The second alternative, referred to as the Rail Overcrossing Alternative, would involve construction of a pedestrian and bicycle overcrossing at Jennings Avenue over the SMART rail corridor. The Rail Overcrossing Alternative would not require closure of an at-grade rail crossing at W. Sixth, W. Seventh, or W. Eighth Street.

Community health risk impacts could occur due to temporary construction emissions. This analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).

SETTING

The project is located in central Sonoma County, which is in the San Francisco Bay Area Air Basin. The BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, the California Air Resources Board (CARB, a part of the California Environmental Protection Agency) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has published the California Environmental Quality Act (CEQA) Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.[1]

Toxic Air Contaminants

Toxic air contaminants (TACs) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, construction activity, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to CARB, diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by CARB, and are listed as carcinogens either under the state's Proposition 65 or under

[1] Bay Area Air Quality Management District, 2011. *BAAQMD CEQA Air Quality Guidelines*. May.

the Federal Hazardous Air Pollutants programs.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These Thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD's website and included in the Air District's updated CEQA Guidelines (updated May 2011). The significance thresholds identified by BAAQMD and used in this analysis are summarized in Table 1.

BAAQMD's adoption of significance thresholds contained in the 2011 CEQA Air Quality Guidelines was called into question by an order issued March 5, 2012, in California Building Industry Association (CBIA) v. BAAQMD (Alameda Superior Court Case No. RGI0548693). The order required BAAQMD to set aside its approval of the thresholds until it has conducted environmental review under CEQA. The ruling made in the case concerned the environmental impacts of adopting the thresholds and how the thresholds would indirectly affect land use development patterns. In August 2013, the Appellate Court struck down the lower court's order to set aside the thresholds. However, this litigation remains pending as the California Supreme Court recently accepted a portion of CBIA's petition to review the appellate court's decision to uphold BAAQMD's adoption of the thresholds. The specific portion of the argument to be considered is in regard to whether CEQA requires consideration of the effects of the environment on a project (as contrasted to the effects of a proposed project on the environment). Therefore, the significance thresholds contained in the 2011 CEQA Air Quality Guidelines are applied to this project, as these thresholds relate to the effects of a proposed project on the environment.

Table 1. Air Quality Significance Thresholds

Metric	Construction Thresholds	Operational Thresholds
Health Risks and Hazards for New Sources		
Excess Cancer Risk	10 per one million	
Chronic or Acute Hazard Index	1.0	
Incremental annual average $PM_{2.5}$	0.3 $\mu g/m^3$	
Health Risks and Hazards for Sensitive Receptors (Cumulative from all sources within 1,000 foot zone of influence) and Cumulative Thresholds for New Sources		
Excess Cancer Risk	100 per one million	
Chronic Hazard Index	10.0	
Annual Average $PM_{2.5}$	0.8 $\mu g/m^3$	
Note: $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less.		

IMPACTS AND MITIGATION MEASURES

Impact: Expose sensitive receptors to substantial pollutant concentrations? ***Less than significant with construction period mitigation measures***

Sensitive receptors are locations where an identifiable subset of the general population (children, asthmatics, the elderly, and the chronically ill) that is at greater risk than the general population to the effects of air pollutants are likely to be exposed. These locations include residences, schools, playgrounds, childcare centers, retirement homes, hospitals, and medical clinics. The closest sensitive receptors to the project site are residences located adjacent to the north and south project boundaries on Jennings Avenue. The Little People Playhouse daycare is located north of the project site on Herbert Street.

Operation of the project is not expected to cause any localized emissions that could expose sensitive receptors to unhealthy air pollutant levels, because the only operational equipment such as gates, lights, and signals would be electric. Construction activity would generate dust and equipment exhaust on a temporary basis. Impacts from project construction are addressed below by alternative.

Preferred Project: At-Grade Construction Activity

Construction activity under this alternative is anticipated to involve grading and site preparation, trenching, paving, and crossing construction. During grading and site preparation activities dust would be generated. Most of the dust would result during grading and site preparation activities. The amount of dust generated would be highly variable and is dependent on the size of the area disturbed at any given time, amount of activity, soil conditions and meteorological conditions. Nearby land uses could be adversely affected by dust generated during construction activities. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less than significant if best management practices are employed to reduce these emissions. *Measure AQ-1 would implement BAAQMD-required best management practices*.

Construction equipment and associated heavy-duty truck traffic generate diesel exhaust, which is a known Toxic Air Contaminant (TAC). Diesel exhaust and $PM_{2.5}$ pose both potential health and nuisance impacts to nearby receptors. A refined health risk assessment of the project construction activities was conducted that evaluated potential health effects of sensitive receptors at nearby residences from construction emissions of diesel particulate matter (DPM) and $PM_{2.5}$.[2] A dispersion model was used to predict the off-site DPM concentrations resulting from project construction so that lifetime cancer risks could be predicted. Figure 1 shows the project site and sensitive receptor locations (residences and daycare facility) used in the air quality dispersion modeling analysis where potential health impacts were evaluated.

Construction Emissions

The refined health risk assessment focused on modeling on-site construction activity using construction fleet information provided by the project applicant. Construction period emissions

[2] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

were modeled using the California Emissions Estimator Model, Version 2013.2.2 (CalEEMod) along with projected construction activity. The number and types of construction equipment and diesel vehicles, along with the anticipated length of their use for different phases of construction were based on site-specific construction activity schedules provided. Construction of the project is expected to occur over an approximate 5 week period during Summer 2016. Eight nighttime work periods are anticipated for the Preferred Project. Figure 1 shows the proposed day and night work areas. Anticipated nighttime work hours are 8:00 p.m. to 6:00 a.m., and anticipated daytime work hours are 7:00 a.m. to 7:00 p.m.

The CalEEMod model provided total annual $PM_{2.5}$ exhaust emissions (assumed to be diesel particulate matter) for the off-road construction equipment and for exhaust emissions from on-road vehicles (haul trucks, vendor trucks, and worker vehicles), with total emissions of 0.0078 tons (15.6 pounds). The on-road emissions are a result of haul truck travel, worker travel, and vendor deliveries during site preparation, grading and construction activities. A trip length of 0.3 miles was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod as 0.02 pounds for the overall construction period. The project emission calculations and construction schedule are provided in *Attachment 1*.

Dispersion Modeling

The U.S. EPA ISCST3 dispersion model was used to calculate concentrations of DPM and $PM_{2.5}$ at existing sensitive receptors (residences) in the vicinity of the project construction area. The ISCST3 dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.[3] Area sources were used to model daytime and nighttime construction emissions. Six area sources were used to represent the different areas of construction during the daytime hours and one area source was used to model the nighttime construction area. To represent the construction equipment exhaust emissions, an emission release height of 6 meters (20 feet) was used for the area sources. The elevated source height reflects the height of the equipment exhaust pipes and buoyancy of the exhaust plume. For modeling fugitive $PM_{2.5}$ emissions, a near ground level release height of 2 meters (6 feet) was used for the area sources. Emissions from vehicle travel on-site and off-site within about 1,000 feet of the construction site were distributed throughout the modeled area sources. Daytime construction emissions were modeled as occurring daily between 7 a.m. and 7 p.m. and nighttime construction emissions were modeled as occurring between 8p.m. and 6 a.m. The area sources used for the modeling and the locations of sensitive receptors where DPM and $PM_{2.5}$ concentrations were calculated are shown on Figure 1.

Five years of hourly meteorological data (2001 - 2005) from the Santa Rosa monitoring station, prepared for use with the ISCST3 model by the BAAQMD, were used in modeling the construction emissions. The monitoring station is about 2.7 miles southwest of the project site.

[3] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.

Annual DPM and $PM_{2.5}$ concentrations from construction activities in 2016 were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby residential locations and the daycare facility on Herbert Street adjacent to the project construction area. Receptor heights of 1.5 meters (5 feet) and 4.5 meters (15 feet) were used to represent the breathing heights of residents of single family homes and second level residents in apartments, respectively.

The maximum-modeled DPM and $PM_{2.5}$ concentrations from project construction occurred at the daycare facility near the northwest corner of Jennings Avenue and Herbert Street. It is unknown whether the daycare facility is also a full time residence, but this analysis assumes that it is. The location of this receptor is identified on Figure 1.

<u>Predicted Cancer Risk and Hazards</u>

Increased cancer risks were calculated using the modeled concentrations and BAAQMD recommended risk assessment methods for infant exposure (3rd trimester through 2 years of age), child exposure, and for an adult exposure.[4] The cancer risk calculations were based on applying the BAAQMD recommended age sensitivity factors to the DPM exposures. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. The default BAAQMD exposure parameters were used.[5] Infant, child, and adult exposures were assumed to occur at all residences through the entire construction period. Additionally, child exposures were conservatively assumed to occur at the daycare facility during the entire construction period.

Results of this assessment indicate that project construction emissions would result in a maximum increased residential child cancer risk of 5.9 in one million and maximum increased residential adult cancer risk of 0.3 in one million. The increased cancer risk for a child exposure at the daycare facility would be 1.5 in one million. These increased cancer risks would be lower than the BAAQMD significance threshold of a cancer risk of 10 in one million or greater and would be considered a *less than significant impact*.

The maximum annual $PM_{2.5}$ concentration was 0.08 micrograms per cubic meter ($\mu g/m^3$). This $PM_{2.5}$ concentration is lower than the BAAQMD significance threshold of 0.3 $\mu g/m^3$ used to judge the significance of health impacts from $PM_{2.5}$. This would be considered a *less than significant impact.*

Potential non-cancer health effects due to chronic exposure to DPM were also evaluated. Non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). California's Office of Environmental Health and Hazards (OEHHA) has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The chronic inhalation

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[4] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards*, May.

[5] Bay Area Air Quality Management District (BAAQMD), 2010, *Air Toxics NSR Program Health Risk Screening Analysis Guidelines*, January.

REL for DPM is 5 μg/m^3. The maximum modeled annual residential and daycare facility DPM concentrations were 0.067 and 0.058 μg/m^3, respectively, which are much lower than the REL. The maximum computed hazard indexes based on these DPM concentrations are 0.013 for residential exposure and 0.012 for the daycare facility. These HIs are much lower than the BAAQMD significance criterion of a hazard index greater than 1.0

Attachment 2 includes the emission calculations used for the area source modeling and the cancer risk calculations. The Preferred Project would have a *less-then-significant impact* with respect to community risk caused by construction activities with implementation of Measure AQ-1.

Measure AQ-1: Include measures to control dust emissions.

Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality and fugitive dust-related impacts associated with grading and new construction to a less than significant. The contractor shall implement the following Best Management Practices that are required of all projects:

1. All unpaved exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 mph.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible and feasible.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Figure 1. Project Construction Areas, Residential Receptors, and Location of Maximum Cancer Risk and $PM_{2.5}$

Rail Overcrossing Construction Activity

Construction activity under this alternative is anticipated to involve demolition, grading and site preparation, trenching, paving, and overcrossing construction. During demolition, grading, and site preparation activities dust would be generated. *Measure AQ-1 would implement BAAQMD-required best management practices*. The same dispersion model and methodology used for evaluating the at-grade crossing, discussed above, was used to predict the off-site DPM and $PM_{2.5}$ concentrations resulting from construction of the Rail Overcrossing Alternative, so that lifetime cancer risks could be predicted. Figure 2 shows the project site and sensitive receptor locations (residences and daycare facility) used in the air quality dispersion modeling analysis where potential health impacts were evaluated.

Construction Emissions

The refined health risk assessment focused on modeling on-site construction activity using construction fleet information included in the project design features. Construction period emissions were modeled using CalEEMod along with projected construction activity. The number and types of construction equipment and diesel vehicles, along with the anticipated length of their use for different phases of construction were based on site-specific construction activity schedules provided. Construction of the project is expected to occur over an approximate 6 month period during 2016, beginning in Summer 2016. Fifty-three nighttime work periods are anticipated for the Rail Overcrossing Alternative. Figure 2 shows the proposed day and night work areas. Anticipated nighttime work hours are 8:00 p.m. to 6:00 a.m., and anticipated daytime work hours are 7:00 a.m. to 7:00 p.m.

The CalEEMod model provided total annual $PM_{2.5}$ exhaust emissions (assumed to be diesel particulate matter) for the off-road construction equipment and for exhaust emissions from on-road vehicles (haul trucks, vendor trucks, and worker vehicles), with total emissions of 0.0524 tons (105 pounds). The on-road emissions are a result of haul truck travel, worker travel, and vendor deliveries during site preparation, grading and construction activities. A trip length of 0.3 miles was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod as 0.5 pounds for the overall construction period. The project emission calculations and construction schedule are provided in *Attachment 1*.

Dispersion Modeling

The U.S. EPA ISCST3 dispersion model was used to calculate concentrations of DPM and $PM_{2.5}$ at existing sensitive receptors in the vicinity of the project construction area. The same modeling methodology, meteorological data, and receptors as were used for the at-grade crossing alternative were used for evaluating this alternative. For the Rail Overcrossing Alternative, the ISCST3 modeling used two area sources to represent the different areas of construction during daytime hours and one area source was used to model the nighttime construction area. To represent the construction equipment exhaust emissions, an emission release height of 6 meters (20 feet) was used for the area sources. For modeling fugitive $PM_{2.5}$ emissions, a near ground

level release height of 2 meters (6 feet) was used for the area sources. Emissions from vehicle travel on-site and off-site within about 1,000 feet of the construction site were distributed throughout the modeled area sources. Daytime construction emissions were modeled as occurring daily between 7 a.m. and 7 p.m. and nighttime construction emissions were modeled as occurring between 8p.m. and 6 a.m. The area sources used for the modeling and the locations of sensitive receptors where DPM and $PM_{2.5}$ concentrations were calculated are shown on Figure 2.

The maximum-modeled DPM and $PM_{2.5}$ concentrations from overcrossing construction occurred at the day care facility near the northwest corner of Jennings Avenue and Herbert Street. It is unknown whether the day care facility is also a full time residence, but this analysis assumes that it is. The location of this receptor is identified on Figure 2.

<u>Predicted Cancer Risk and Hazards</u>

The methods and assumptions used for calculating cancer risks from the at-grade construction alternative, described above, were used for calculating cancer risks from construction of the overcrossing alternative. Results of this assessment indicate that project construction emissions would result in a maximum increased residential child cancer risk of 28.4 in one million and maximum increased residential adult cancer risk of 1.5 in one million. The increased cancer risk for a child exposure at the daycare facility would be 8.4 in one million. The increased residential child cancer risk would be greater than the BAAQMD significance threshold of a cancer risk of 10 in one million or greater and would be considered a *significant impact*.

The maximum annual $PM_{2.5}$ concentration was 0.33 $\mu g/m^3$. This $PM_{2.5}$ concentration is greater than the BAAQMD significance threshold of 0.3 $\mu g/m^3$ used to judge the significance of health impacts from $PM_{2.5}$. This would be considered a *significant impact.*

Potential non-cancer health effects due to chronic exposure to DPM were also evaluated. The maximum modeled annual residential and daycare facility DPM concentrations were 0.325 and 0.319 $\mu g/m^3$, respectively, which are much lower than the REL of 5 $\mu g/m^3$. The maximum computed hazard indexes based on these DPM concentrations are 0.065 for residential exposure and 0.064 for the daycare facility. These HIs are much lower than the BAAQMD significance criterion of a hazard index greater than 1.0

Attachment 2 includes the emission calculations used for the area source modeling and the cancer risk calculations.

The project would have a *significant impact* with respect to community risk caused by construction activities. *Implementation of Measure AQ-1 and Mitigation Measure AQ-2 would reduce this impact to a level of less than significant*.

Mitigation Measure AQ-2: Selection of equipment during construction to minimize emissions. Such equipment selection would include the following:

1. All diesel-powered off-road equipment larger than 50 horsepower and operating at the site for more than two days continuously shall meet U.S. EPA particulate matter emissions standards for Tier 2 engines or equivalent;
2. All diesel-powered aerial lifts, forklifts, generator sets, and light plants shall meet U.S. EPA particulate matter emissions standards for Tier 4 engines or equivalent; or the construction contractor shall use other measures to minimize construction period diesel particulate matter emissions to reduce the predicted cancer risk below the threshold. Such measures may include the use of line power instead of generators, alternative fuels (e.g., LPG, biofuels), added exhaust devices, or a combination of measures, provided that these measures are demonstrated to provide the necessary DPM and $PM_{2.5}$ emission reductions and are approved by the lead agency; and
3. Minimize the number of hours that equipment will operate, including the use of idling restrictions.

Effectiveness of Mitigation Measure AQ-1 and AQ-2

Implementation of Mitigation Measure AQ-2 would reduce on-site diesel exhaust emissions used for nighttime operation by approximately 83 percent and by about 62 percent for equipment used during the day time. Implementation of Measure AQ-1, which are the Best Management Practices recommended by BAAQMD, is considered to reduce exhaust emissions by an additional 5 percent. Emissions associated with implementation of Mitigation Measure AQ-2 were modeled using CalEEMod, however CalEEMod is not set up to account for any additional reductions due to implementation of Measure AQ-1, and thus were not taken. Modeled mitigated emissions were then input back into the dispersion model to predict concentration of DPM and annual $PM_{2.5}$. The computed maximum increased child cancer risk with implementation of mitigation measures would be 8.2 in one million and the maximum $PM_{2.5}$ concentration would be 0.09 $\mu g/m^3$. For the daycare facility, the maximum child cancer risk would be 1.7 in one million and the maximum $PM_{2.5}$ concentration would be 0.06 $\mu g/m^3$. The increased child cancer risks would be reduced to below 10 chances per million and annual $PM_{2.5}$ concentrations would be reduced below 0.3 $\mu g/m^3$. As a result, the project with mitigation measures would have *a less-than-significant* impact with respect to community risk caused by construction activities.

Figure 2. Over-Crossing Construction Areas, Residential Receptors, and Location of Maximum Cancer Risk and $PM_{2.5}$

Cumulative Community Risk Impacts

Based on refined modeling of construction health risk, the combination of exposures from temporary construction and nearby existing sources of TACs is evaluated below. For cumulative community risk impacts, the BAAQMD CEQA Guidelines recommend that lead agencies consider sources of TAC emissions located within 1,000 feet of the maximally exposed individual (MEI). There are no stationary sources of TACs emissions within 1,000 feet of the MEI that could cumulatively affect the project construction MEI.

Busy roadways are a source of TAC emissions that could affect new sensitive receptors developed at the project site. The BAAQMD provides screening tables that indicate predicted

community risk impacts that roadways pose.[6] Jennings Avenue in the vicinity of the project site has less than 10,000 average daily traffic trips (ADT),[7] or below the BAAQMD screening level.

The project MEI is located about 80 feet from a rail line. The future Sonoma-Marin Area Rail Transit (SMART) trains would use this rail line and would be modern diesel-powered trains, which are expected to have relatively low emissions. The SMART Supplemental Environmental Impact Report predicted excess cancer risk of 7 per million or less at 30 feet from tracks, including SMART trains and freight service.[8] $PM_{2.5}$ concentrations were not quantified, but were predicted to be very low and were found to be less than significant.

As shown in Table 2, the cumulative cancer risk, annual $PM_{2.5}$ concentration and hazard index associated with project construction under both alternatives and exposure from other nearby sources are below the significance thresholds. There are no nearby planned and approved construction projects that would be expected to result in a cumulative construction health risk impact.

Table 2. Cumulative Risk

Source	MEI Distance (feet)	Cancer Risk (per million)	$PM_{2.5}$ Concentration ($\mu g/m^3$)	Acute or Chronic Hazard (HI)
Unmitigated Project Construction, Preferred Project	75	5.9	0.08	0.01
Mitigated Project Construction, Rail Overcrossing Alt.	75	8.2	0.09	0.02
SMART and freight service	80	<7.0	--	--
Cumulative, Preferred Project		<12.9	0.08	0.01
Cumulative, Rail Overcrossing Alt. (Mitigated Construction)		<15.2	0.09	0.02
BAAQMD Thresholds		*100*	*0.8*	*10.0*
Exceed Threshold?		No	No	No

Note: $\mu g/m^3$ = micrograms per cubic meter, HI = hazard index, BAAQMD = Bay Area Air Quality Management District, MEI = maximally exposed individual.

[6] BAAQMD Roadway Analysis Tables can be accessed from BAAQMD's website at: *http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx*
[7] City of Santa Rosa, 2009. Available online: http://ci.santa-rosa.ca.us/doclib/Documents/trafficcounts09.pdf.
[8] Sonoma-Marin Area Rail Transit District, 2008. *Supplemental Environmental Impact Report for the Sonoma-Marin Area Rail Transit Project* (SCH 2002112033).

Attachment 1: CalEEMod Input and Output Worksheets and Construction Schedule

Project Name:		Jennings Avenue At-Grade Rail Crossing (Day)						
Qty	**Description**	**HP**	**Load Factor**	**Hours/day**	**Total Work Days**	**CalEEMod Hrs**	**Annual Hours**	**Comments**
	Site Prep / Grading / Excavation	**Start Date:**	**6/1/2016**					
		End Date:	**6/7/2016**					**Soil Hauling Volume**
1	Excavator	162	0.3819	6	2	2.4	12	Export volume = 25_ cubic yards
1	Backhoe	97	0.3685	6	2	2.4	12	Import volume = _**50**_ cubic yards
2	Light Plants	84	0.74	8	0	0	0	
1	Loader	97	0.3685	6	2	2.4	12	
								Vendor Trucks
								Concrete trucks - 4 total round trips
	Trenching/Utilities	**Start Date:**	**6/8/2016**					Aggregate base - 6 total round trips
		End Date:	**6/14/2016**					Asphalt materials - 4 total round trips
1	Backhoe	97	0.3685	6	2	2.4	12	
1	Loader	97	0.3685	4	2	1.6	8	
2	Light Plants	84	0.74	8	0	0	0	
1	Generator Sets	84	0.74	6	2	2.4	12	
	Crossing Construction	**Start Date:**	**6/15/2016**					
		End Date:	**6/28/2016**					
1	Cranes	226	0.2881	6	0	0	0	Electric? (Y/N) ___ Otherwise assumed diesel
1	Backhoes	97	0.3685	6	0	0	0	Liquid Propane (LPG)? (Y/N) _N__ Otherwise Assumed diesel
1	Generator Sets	84	0.74	4	2	0.8	8	Or temporary line power? (Y/N) ___
1	Loader	97	0.3685	4	1	0.4	4	
2	Light Plants	84	0.74	8	0	0	0	
	Paving	**Start Date:**	**6/29/2016**					
		Start Date:	**7/5/2016**					
1	Pavers	125	0.4154	8	0	0	0	
1	Paving Equipment	130	0.3551	8	0	0	0	
1	Rollers	80	0.3752	8	0	0	0	
1	Backhoes	97	0.3685	7	3	4.2	21	
2	Light Plants	84	0.74	8	0	0	0	

Project Name:		Jennings Avenue At-Grade Rail Crossing (Night)						
Qty	Description	HP	Load Factor	Hours/day	Total Work Days	CalEEMod Hrs	Annual Hours	Comments
	Site Prep / Grading / Excavation	**Start Date:**	**6/1/2016**					
		End Date:	**6/7/2016**					
1	Excavator	162	0.3819	6	2	2.4	12	
1	Backhoe	97	0.3685	6	2	2.4	12	
2	Light Plants	84	0.74	8	2	3.2	32	
1	Loader	97	0.3685	6	2	2.4	12	
	Trenching/Utilities	**Start Date:**	**6/8/2016**					
		End Date:	**6/14/2016**					
1	Backhoe	97	0.3685	6	2	2.4	12	
1	Loader	97	0.3685	4	2	1.6	8	
2	Light Plants	84	0.74	8	2	3.2	32	
1	Generator Sets	84	0.74	6	2	2.4	12	
	Crossing Construction	**Start Date:**	**6/15/2016**					
		End Date:	**6/28/2016**					
1	Cranes	226	0.2881	6	2	1.2	12	Electric? (Y/N) ___ Otherwise assumed diesel
1	Backhoes	97	0.3685	6	2	1.2	12	Liquid Propane (LPG)? (Y/N) _N__ Otherwise Assumed diesel
1	Generator Sets	84	0.74	4	3	1.2	12	Or temporary line power? (Y/N) ___
1	Loader	97	0.3685	4	2	0.8	8	
2	Light Plants	84	0.74	8	3	2.4	48	
	Paving	**Start Date:**	**6/29/2016**					
		Start Date:	**7/5/2016**					
1	Pavers	125	0.4154	8	1	1.6	8	
1	Paving Equipment	130	0.3551	8	1	1.6	8	
1	Rollers	80	0.3752	8	1	1.6	8	
1	Backhoes	97	0.3685	7	1	1.4	7	
2	Light Plants	84	0.74	8	1	1.6	16	

Project Name:		Jennings Avenue Bicycle & Pedestrian Overcrossing (Day)							
Qty	**Description**	**HP**	**Load Factor**	**Hours/day**	**Total Work Days**	**CalEEMod Hrs**	**Annual Hours**	**Comments**	**Night Work (hours)**
	Site Prep / Grading / Excavation	**Start Date:**	**6/1/2016**						
		End Date:	**6/21/2016**					**Soil Hauling Volume**	
1	Excavator	162	0.3819	6	4	1.6	24	Export volume = 75_ cubic yards	18
1	Backhoe	97	0.3685	6	4	1.6	24	Import volume = **25** cubic yards	18
1	Loader	97	0.3685	6	4	1.6	24		18
1	Crawler Tractor	208	0.43	6	4	1.6	24		18
1	Grader	174	0.41	6	4	1.6	24		18
1	Street Sweeper	64	0.46	2	4	0.533333333	8		6
2	Light Plants	84	0.74	8	0	0	0		48
								Vendor Trucks	0
								Concrete trucks - 60 total round trips	
	Demolition	**Start Date:**	**6/22/2016**					Aggregate base - 30 total round trips	
		End Date:	**7/5/2016**					Asphalt materials - 10 total round trips	
1	Excavator	162	0.3819	7	2	1.4	14	Demolition - 167 cubic yards	7
1	Loader	97	0.3685	6	2	1.2	12		6
1	Generator Sets	84	0.74	8	2	1.6	16		8
1	Air Compressor	78	0.48	7	2	1.4	14		7
1	Hoe Ram	50	0.5	4	2	0.8	8		4
1	Paving Grinder	130	0.3551	8	0	0	0		8
1	Street Sweeper	64	0.46	2	2	0.4	4		2
2	Light Plants	84	0.74	8	0	0	0		16
	Trenching/Utilities	**Start Date:**	**7/6/2016**						
		End Date:	**8/2/2016**						
1	Backhoe	97	0.3685	6	7	2.1	42		18
1	Loader	97	0.3685	4	7	1.4	28		12
1	Generator Sets	84	0.74	6	7	2.1	42		18
2	Pumps	84	0.74	4	7	1.4	56		12
1	Plate Compactor	8	0.43	4	7	1.4	28		12
1	Street Sweeper	64	0.46	2	7	0.7	14		6
2	Light Plants	84	0.74	8	0	0	0		48
	Crossing Construction	**Start Date:**	**8/3/2016**						
		End Date:	**12/6/2016**						
1	Cranes	226	0.2881	4	27	1.2	108	Electric? (Y/N) ___ Otherwise assumed diesel	72
1	Excavator	162	0.3819	3	48	1.6	144	Liquid Propane (LPG)? (Y/N) _N__ Otherwise Assumed diesel	96
1	Generator Sets	84	0.74	4	48	2.133333333	192	Or temporary line power? (Y/N) ___	128
2	Light Plants	84	0.74	8	0	0	0		736
1	Loader	97	0.3685	4	27	1.2	108		72
1	Aerial Lift	62	0.3082	4	48	2.133333333	192		128
1	Rough Terrain Forklift	100	0.4	4	48	2.133333333	192		128
1	Excavator Mounted Auger	205	0.5	8	20	1.777777778	160		112
	Paving	**Start Date:**	**12/7/2016**						
		Start Date:	**12/7/2016**						
1	Pavers	125	0.4154	8	1	8	8		0
1	Paving Equipment	130	0.3551	8	1	8	8		0
1	Rollers	80	0.3752	8	1	8	8		0

Project Name:		Jennings Avenue Bicycle & Pedestrian Overcrossing (Night)							
Qty	**Description**	**HP**	**Load Factor**	**Hours/day**	**Total Work Days**	**CalEEMod Hrs**	**Annual Hours**	**Comments**	**Night Work (hours)**
	Site Prep / Grading / Excavation	**Start Date:**	**6/1/2016**						
		End Date:	**6/21/2016**						
1	Excavator	162	0.3819	6	3	1.2	18		18
1	Backhoe	97	0.3685	6	3	1.2	18		18
1	Loader	97	0.3685	6	3	1.2	18		18
1	Crawler Tractor	208	0.43	6	3	1.2	18		18
1	Grader	174	0.41	6	3	1.2	18		18
1	Street Sweeper	64	0.46	2	3	0.4	6		6
2	Light Plants	84	0.74	8	3	1.6	48		48
									0
	Demolition	**Start Date:**	**6/22/2016**						
		End Date:	**7/5/2016**						
1	Excavator	162	0.3819	7	1	0.7	7		7
1	Loader	97	0.3685	6	1	0.6	6		6
1	Generator Sets	84	0.74	8	1	0.8	8		8
1	Air Compressor	78	0.48	7	1	0.7	7		7
1	Hoe Ram	50	0.5	4	1	0.4	4		4
1	Paving Grinder	130	0.3551	8	1	0.8	8		8
1	Street Sweeper	64	0.46	2	1	0.2	2		2
2	Light Plants	84	0.74	8	1	0.8	16		16
	Trenching/Utilities	**Start Date:**	**7/6/2016**						
		End Date:	**8/2/2016**						
1	Backhoe	97	0.3685	6	3	0.9	18		18
1	Loader	97	0.3685	4	3	0.6	12		12
1	Generator Sets	84	0.74	6	3	0.9	18		18
2	Pumps	84	0.74	4	3	0.6	24		12
1	Plate Compactor	8	0.43	4	3	0.6	12		12
1	Street Sweeper	64	0.46	2	3	0.3	6		6
2	Light Plants	84	0.74	8	3	1.2	48		48
	Crossing Construction	**Start Date:**	**8/3/2016**						
		End Date:	**12/6/2016**						
1	Cranes	226	0.2881	4	18	0.8	72	Electric? (Y/N) ___ Otherwise assumed diesel	72
1	Excavator	162	0.3819	3	32	1.066666667	96	Liquid Propane (LPG)? (Y/N) _N__ Otherwise Assumed diesel	96
1	Generator Sets	84	0.74	4	32	1.422222222	128	Or temporary line power? (Y/N) ___	128
2	Light Plants	84	0.74	8	32	2.844444444	512		736
1	Loader	97	0.3685	4	18	0.8	72		72
1	Aerial Lift	62	0.3082	4	32	1.422222222	128		128
1	Rough Terrain Forklift	100	0.4	4	32	1.422222222	128		128
1	Excavator Mounted Auger	205	0.5	8	14	1.244444444	112		112
	Paving	**Start Date:**	**12/7/2016**						
		Start Date:	**12/7/2016**						
1	Pavers	125	0.4154	8	0	0	0		0
1	Paving Equipment	130	0.3551	8	0	0	0		0
1	Rollers	80	0.3752	8	0	0	0		0

Jennings Ave At-Grade Crossing (Day) - Santa Rosa

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.35	0.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 75

Climate Zone 4 **Operational Year** 2014

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 641.35 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Land Use - Lot acreage from project description

Construction Phase - Anticipated construction schedule provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

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Off-road Equipment - Proposed construction equipment list provided by project applicant.

Trips and VMT - Concrete trucks = 4 RT or 8 trips, Aggregate base trucks = 6 RT or 12 trips, Asphalt trucks = 4 RT or 8 trips. Total vendor trips = 28. Concrete, aggregate and asphalt trucks entered as heavy-duty trucks. 0.3 mile trip lengths to calculate risk from on-site vehicle travel.

Grading - 50 CY soil import, 25 CY soil export

Table Name	Column Name	Default Value	New Value

tblConstructionPhase	NumDays	100.00	10.00
tblConstructionPhase	NumDays	2.00	5.00
tblGrading	MaterialExported	0.00	25.00
tblGrading	MaterialImported	0.00	50.00
tblLandUse	LotAcreage	0.00	0.35
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	UsageHours	4.00	1.40
tblOffRoadEquipment	UsageHours	7.00	1.60
tblOffRoadEquipment	UsageHours	7.00	1.60
tblOffRoadEquipment	UsageHours	8.00	0.40
tblOffRoadEquipment	UsageHours	8.00	1.20
tblOffRoadEquipment	UsageHours	6.00	2.40
tblOffRoadEquipment	UsageHours	7.00	4.20
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripNumber	0.00	28.00
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30

tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	2.9300e-003	0.0239	0.0221	3.0000e-005	2.0000e-005	1.6700e-003	1.6900e-003	0.0000	1.5700e-003	1.5800e-003	0.0000	2.4138	2.4138	5.6000e-004	0.0000	2.4256
Total	**2.9300e-003**	**0.0239**	**0.0221**	**3.0000e-005**	**2.0000e-005**	**1.6700e-003**	**1.6900e-003**	**0.0000**	**1.5700e-003**	**1.5800e-003**	**0.0000**	**2.4138**	**2.4138**	**5.6000e-004**	**0.0000**	**2.4256**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Prep/Grading/Excavation	Grading	6/1/2016	6/7/2016	5	5	
2	Trenching/Utilities	Trenching	6/8/2016	6/14/2016	5	5	
3	Crossing Construction	Building Construction	6/15/2016	6/28/2016	5	10	
4	Paving	Paving	6/29/2016	7/5/2016	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep/Grading/Excavation	Concrete/Industrial Saws	0	8.00	81	0.73
Site Prep/Grading/Excavation	Excavators	1	2.40	162	0.38
Site Prep/Grading/Excavation	Rubber Tired Dozers	0	1.00	255	0.40
Site Prep/Grading/Excavation	Tractors/Loaders/Backhoes	2	2.40	97	0.37
Trenching/Utilities	Generator Sets	1	2.40	84	0.74
Trenching/Utilities	Tractors/Loaders/Backhoes	1	2.40	97	0.37
Trenching/Utilities	Tractors/Loaders/Backhoes	1	1.60	97	0.37
Crossing Construction	Cranes	0	1.40	226	0.29
Crossing Construction	Forklifts	0	6.00	89	0.20
Crossing Construction	Generator Sets	1	0.80	84	0.74
Crossing Construction	Tractors/Loaders/Backhoes	1	0.40	97	0.37
Crossing Construction	Tractors/Loaders/Backhoes	0	1.20	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	0	1.60	125	0.42
Paving	Paving Equipment	0	1.60	130	0.36
Paving	Rollers	0	1.60	80	0.38
Paving	Tractors/Loaders/Backhoes	1	4.20	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Prep/Grading/Excavati	3	8.00	0.00	9.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Trenching/Utilities	3	8.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Crossing Construction	2	0.00	0.00	28.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT

Paving		1	3.00	0.00	0.00	0.30	0.30	0.30 LD_Mix	HDT_Mix	HHDT

3.2 Site Prep/Grading/Excavation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0000e-004	8.2100e-003	6.1900e-003	1.0000e-005		5.4000e-004	5.4000e-004		5.0000e-004	5.0000e-004	0.0000	0.8146	0.8146	2.5000e-004	0.0000	0.8198
Total	**8.0000e-004**	**8.2100e-003**	**6.1900e-003**	**1.0000e-005**	**0.0000**	**5.4000e-004**	**5.4000e-004**	**0.0000**	**5.0000e-004**	**5.0000e-004**	**0.0000**	**0.8146**	**0.8146**	**2.5000e-004**	**0.0000**	**0.8198**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.0000e-005	1.1000e-004	9.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0116	0.0116	0.0000	0.0000	0.0116
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	1.0000e-005	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	8.0000e-003	8.0000e-003	0.0000	0.0000	8.0200e-003
Total	**1.2000e-004**	**1.2000e-004**	**1.1600e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0196**	**0.0196**	**0.0000**	**0.0000**	**0.0197**

3.3 Trenching/Utilities - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.1000e-004	7.6900e-003	5.8700e-003	1.0000e-005		5.7000e-004	5.7000e-004		5.4000e-004	5.4000e-004	0.0000	0.7910	0.7910	1.5000e-004	0.0000	0.7941
Total	**9.1000e-004**	**7.6900e-003**	**5.8700e-003**	**1.0000e-005**		**5.7000e-004**	**5.7000e-004**		**5.4000e-004**	**5.4000e-004**	**0.0000**	**0.7910**	**0.7910**	**1.5000e-004**	**0.0000**	**0.7941**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	1.0000e-005	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	8.0000e-003	8.0000e-003	0.0000	0.0000	8.0200e-003
Total	**6.0000e-005**	**1.0000e-005**	**2.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**8.0000e-003**	**8.0000e-003**	**0.0000**	**0.0000**	**8.0200e-003**

3.4 Crossing Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	4.0000e-004	3.2300e-003	2.5000e-003	0.0000		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	0.3560	0.3560	5.0000e-005	0.0000	0.3570
Total	**4.0000e-004**	**3.2300e-003**	**2.5000e-003**	**0.0000**		**2.3000e-004**	**2.3000e-004**		**2.3000e-004**	**2.3000e-004**	**0.0000**	**0.3560**	**0.3560**	**5.0000e-005**	**0.0000**	**0.3570**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.8000e-004	3.6000e-004	2.9500e-003	0.0000	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0362	0.0362	0.0000	0.0000	0.0362
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.8000e-004**	**3.6000e-004**	**2.9500e-003**	**0.0000**	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0362**	**0.0362**	**0.0000**	**0.0000**	**0.0362**

3.5 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.5000e-004	4.2700e-003	3.1700e-003	0.0000		3.3000e-004	3.3000e-004		3.0000e-004	3.0000e-004	0.0000	0.3854	0.3854	1.2000e-004	0.0000	0.3878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total	**4.5000e-004**	**4.2700e-003**	**3.1700e-003**	**0.0000**		**3.3000e-004**	**3.3000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**0.3854**	**0.3854**	**1.2000e-004**	**0.0000**	**0.3878**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	1.0000e-005	8.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.0000e-003	3.0000e-003	0.0000	0.0000	3.0100e-003
Total	**2.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.0000e-003**	**3.0000e-003**	**0.0000**	**0.0000**	**3.0100e-003**

Jennings Ave At-Grade Crossing (Night) - Santa Rosa

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.35	0.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 75

Climate Zone 4 **Operational Year** 2014

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 641.35 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Land Use - Lot acreage from project description

Construction Phase - Anticipated construction schedule provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Trips and VMT - 0.3 mile trip lengths to calculate risk from on-site vehicle travel.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	10.00
tblConstructionPhase	NumDays	2.00	5.00

tblLandUse	LotAcreage	0.00	0.35
tblOffRoadEquipment	HorsePower	171.00	84.00
tblOffRoadEquipment	HorsePower	171.00	84.00
tblOffRoadEquipment	HorsePower	171.00	84.00
tblOffRoadEquipment	HorsePower	171.00	84.00
tblOffRoadEquipment	LoadFactor	0.42	0.74
tblOffRoadEquipment	LoadFactor	0.42	0.74
tblOffRoadEquipment	LoadFactor	0.42	0.74
tblOffRoadEquipment	LoadFactor	0.42	0.74
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	4.00	1.20
tblOffRoadEquipment	UsageHours	7.00	1.60
tblOffRoadEquipment	UsageHours	7.00	1.60
tblOffRoadEquipment	UsageHours	8.00	1.20
tblOffRoadEquipment	UsageHours	8.00	0.80
tblOffRoadEquipment	UsageHours	6.00	2.40
tblOffRoadEquipment	UsageHours	7.00	1.40
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30

tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0103	0.0926	0.0603	8.0000e-005	2.0000e-005	6.7400e-003	6.7600e-003	1.0000e-005	6.2400e-003	6.2500e-003	0.0000	7.5110	7.5110	2.0800e-003	0.0000	7.5547
Total	**0.0103**	**0.0926**	**0.0603**	**8.0000e-005**	**2.0000e-005**	**6.7400e-003**	**6.7600e-003**	**1.0000e-005**	**6.2400e-003**	**6.2500e-003**	**0.0000**	**7.5110**	**7.5110**	**2.0800e-003**	**0.0000**	**7.5547**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Prep/Grading/Excavation	Grading	6/1/2016	6/7/2016	5	5	
2	Trenching/Utilities	Trenching	6/8/2016	6/14/2016	5	5	
3	Crossing Construction	Building Construction	6/15/2016	6/28/2016	5	10	
4	Paving	Paving	6/29/2016	7/5/2016	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep/Grading/Excavation	Concrete/Industrial Saws	0	8.00	81	0.73
Site Prep/Grading/Excavation	Excavators	1	2.40	162	0.38
Site Prep/Grading/Excavation	Other Construction Equipment	2	3.20	84	0.74
Site Prep/Grading/Excavation	Rubber Tired Dozers	0	1.00	255	0.40
Site Prep/Grading/Excavation	Tractors/Loaders/Backhoes	2	2.40	97	0.37
Trenching/Utilities	Generator Sets	1	2.40	84	0.74
Trenching/Utilities	Other Construction Equipment	2	3.20	84	0.74
Trenching/Utilities	Tractors/Loaders/Backhoes	1	2.40	97	0.37
Trenching/Utilities	Tractors/Loaders/Backhoes	1	1.60	97	0.37
Crossing Construction	Cranes	1	1.20	226	0.29
Crossing Construction	Forklifts	0	6.00	89	0.20
Crossing Construction	Generator Sets	1	1.20	84	0.74
Crossing Construction	Other Construction Equipment	2	2.40	84	0.74
Crossing Construction	Tractors/Loaders/Backhoes	1	1.20	97	0.37
Crossing Construction	Tractors/Loaders/Backhoes	1	0.80	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Other Construction Equipment	2	1.60	84	0.74
Paving	Pavers	1	1.60	125	0.42
Paving	Paving Equipment	1	1.60	130	0.36
Paving	Rollers	1	1.60	80	0.38
Paving	Tractors/Loaders/Backhoes	1	1.40	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Prep/Grading/Excavati	5	13.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Trenching/Utilities	5	13.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Crossing Construction	6	0.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT

3.2 Site Prep/Grading/Excavation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3400e-003	0.0221	0.0148	2.0000e-005		1.6300e-003	1.6300e-003		1.5000e-003	1.5000e-003	0.0000	1.8198	1.8198	5.5000e-004	0.0000	1.8313
Total	**2.3400e-003**	**0.0221**	**0.0148**	**2.0000e-005**	**0.0000**	**1.6300e-003**	**1.6300e-003**	**0.0000**	**1.5000e-003**	**1.5000e-003**	**0.0000**	**1.8198**	**1.8198**	**5.5000e-004**	**0.0000**	**1.8313**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	2.0000e-005	3.3000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0130	0.0130	0.0000	0.0000	0.0130

Total	9.0000e-005	2.0000e-005	3.3000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0130	0.0130	0.0000	0.0000	0.0130

3.3 Trenching/Utilities - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.4500e-003	0.0216	0.0144	2.0000e-005		1.6500e-003	1.6500e-003		1.5400e-003	1.5400e-003	0.0000	1.7962	1.7962	4.5000e-004	0.0000	1.8057
Total	**2.4500e-003**	**0.0216**	**0.0144**	**2.0000e-005**		**1.6500e-003**	**1.6500e-003**		**1.5400e-003**	**1.5400e-003**	**0.0000**	**1.7962**	**1.7962**	**4.5000e-004**	**0.0000**	**1.8057**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	2.0000e-005	3.3000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0130	0.0130	0.0000	0.0000	0.0130
Total	**9.0000e-005**	**2.0000e-005**	**3.3000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0130**	**0.0130**	**0.0000**	**0.0000**	**0.0130**

3.4 Crossing Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.7600e-003	0.0349	0.0210	3.0000e-005		2.4900e-003	2.4900e-003		2.3100e-003	2.3100e-003	0.0000	2.6976	2.6976	7.2000e-004	0.0000	2.7128
Total	**3.7600e-003**	**0.0349**	**0.0210**	**3.0000e-005**		**2.4900e-003**	**2.4900e-003**		**2.3100e-003**	**2.3100e-003**	**0.0000**	**2.6976**	**2.6976**	**7.2000e-004**	**0.0000**	**2.7128**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	1.4400e-003	0.0140	9.0500e-003	1.0000e-005		9.7000e-004	9.7000e-004		8.9000e-004	8.9000e-004	0.0000	1.1564	1.1564	3.5000e-004	0.0000	1.1637
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.4400e-003**	**0.0140**	**9.0500e-003**	**1.0000e-005**		**9.7000e-004**	**9.7000e-004**		**8.9000e-004**	**8.9000e-004**	**0.0000**	**1.1564**	**1.1564**	**3.5000e-004**	**0.0000**	**1.1637**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	3.0000e-005	3.9000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0150	0.0150	0.0000	0.0000	0.0150
Total	**1.1000e-004**	**3.0000e-005**	**3.9000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0150**	**0.0150**	**0.0000**	**0.0000**	**0.0150**

Jennings Ave Overcrossing (Day) - Santa Rosa

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.50	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2014
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Land Use - Lot acreage from project description

Construction Phase - Anticipated construction schedule provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Construction Off-road Equipment Mitigation - Tier 4 mitigation for aerial lift, rough-terrain forklift and generators. Tier 2 mitigation for equipment >50 hp + BAAQMD BMPs

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 2

tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstructionPhase	NumDays	200.00	90.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	4.00	15.00
tblConstructionPhase	NumDays	10.00	1.00
tblGrading	AcresOfGrading	3.00	1.50
tblGrading	MaterialExported	0.00	75.00
tblGrading	MaterialImported	0.00	25.00
tblLandUse	LotAcreage	0.00	1.50
tblOffRoadEquipment	HorsePower	171.00	130.00
tblOffRoadEquipment	HorsePower	171.00	84.00
tblOffRoadEquipment	HorsePower	87.00	50.00
tblOffRoadEquipment	LoadFactor	0.42	0.36
tblOffRoadEquipment	LoadFactor	0.42	0.50
tblOffRoadEquipment	LoadFactor	0.34	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	1.20
tblOffRoadEquipment	UsageHours	8.00	2.10
tblOffRoadEquipment	UsageHours	6.00	1.60
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	1.20

tblOffRoadEquipment	UsageHours	8.00	1.20
tblOffRoadEquipment	UsageHours	7.00	1.60
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	200.00
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0404	0.3927	0.2797	4.6000e-004	9.2000e-004	0.0217	0.0226	1.2000e-004	0.0205	0.0206	0.0000	42.1408	42.1408	0.0103	0.0000	42.3570

Total	0.0404	0.3927	0.2797	4.6000e-004	9.2000e-004	0.0217	0.0226	1.2000e-004	0.0205	0.0206	0.0000	42.1408	42.1408	0.0103	0.0000	42.3570

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0144	0.2743	0.3230	4.6000e-004	4.8000e-004	7.6200e-003	8.0900e-003	5.0000e-005	7.6200e-003	7.6700e-003	0.0000	42.1407	42.1407	0.0103	0.0000	42.3569
Total	**0.0144**	**0.2743**	**0.3230**	**4.6000e-004**	**4.8000e-004**	**7.6200e-003**	**8.0900e-003**	**5.0000e-005**	**7.6200e-003**	**7.6700e-003**	**0.0000**	**42.1407**	**42.1407**	**0.0103**	**0.0000**	**42.3569**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	64.40	30.14	-15.48	0.00	47.83	64.84	64.19	58.33	62.79	62.75	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Prep/Grading/Excavation	Grading	6/1/2016	6/21/2016	5	15	
2	Demolition	Demolition	6/22/2016	7/5/2016	5	10	
3	Trenching/Utilities	Trenching	7/6/2016	8/2/2016	5	20	
4	Crossing Construction	Building Construction	8/3/2016	12/6/2016	5	90	
5	Paving	Paving	12/7/2016	12/7/2016	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep/Grading/Excavation	Crawler Tractors	1	1.60	208	0.43
Site Prep/Grading/Excavation	Excavators	1	1.60	162	0.38
Site Prep/Grading/Excavation	Graders	1	1.60	174	0.41
Site Prep/Grading/Excavation	Rubber Tired Dozers	0	6.00	255	0.40
Site Prep/Grading/Excavation	Sweepers/Scrubbers	1	0.50	64	0.46
Site Prep/Grading/Excavation	Tractors/Loaders/Backhoes	2	1.60	97	0.37
Demolition	Air Compressors	1	1.40	78	0.48
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	1	1.40	162	0.38
Demolition	Generator Sets	1	1.60	84	0.74
Demolition	Other Construction Equipment	0	0.80	130	0.36
Demolition	Other General Industrial Equipment	1	0.80	50	0.50
Demolition	Rubber Tired Dozers	0	8.00	255	0.40
Demolition	Sweepers/Scrubbers	1	0.40	64	0.46
Demolition	Tractors/Loaders/Backhoes	1	1.20	97	0.37
Trenching/Utilities	Generator Sets	1	2.10	84	0.74
Trenching/Utilities	Plate Compactors	1	1.40	8	0.43
Trenching/Utilities	Pumps	2	1.40	84	0.74
Trenching/Utilities	Sweepers/Scrubbers	1	0.70	64	0.46
Trenching/Utilities	Tractors/Loaders/Backhoes	1	2.10	97	0.37
Trenching/Utilities	Tractors/Loaders/Backhoes	1	1.40	97	0.37
Crossing Construction	Aerial Lifts	1	2.10	62	0.31
Crossing Construction	Bore/Drill Rigs	1	1.80	205	0.50
Crossing Construction	Cranes	1	1.20	226	0.29

Crossing Construction	Excavators	1	1.60	162	0.38
Crossing Construction	Forklifts	0	6.00	89	0.20
Crossing Construction	Generator Sets	1	2.10	84	0.74
Crossing Construction	Other Construction Equipment	0	1.20	84	0.50
Crossing Construction	Rough Terrain Forklifts	1	2.10	100	0.40
Crossing Construction	Tractors/Loaders/Backhoes	1	1.20	97	0.37
Crossing Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Prep/Grading/Excavati	6	15.00	0.00	13.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	20.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Trenching/Utilities	7	18.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Crossing Construction	7	0.00	0.00	200.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Clean Paved Roads

3.2 Site Prep/Grading/Excavation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.0000e-004	0.0000	8.0000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.3800e-003	0.0479	0.0250	4.0000e-005		2.6400e-003	2.6400e-003		2.4300e-003	2.4300e-003	0.0000	3.7142	3.7142	1.1200e-003	0.0000	3.7378
Total	**4.3800e-003**	**0.0479**	**0.0250**	**4.0000e-005**	**8.0000e-004**	**2.6400e-003**	**3.4400e-003**	**9.0000e-005**	**2.4300e-003**	**2.5200e-003**	**0.0000**	**3.7142**	**3.7142**	**1.1200e-003**	**0.0000**	**3.7378**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	1.7000e-004	1.3700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0168	0.0168	0.0000	0.0000	0.0168
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	8.0000e-005	1.1600e-003	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0450	0.0450	1.0000e-005	0.0000	0.0451
Total	**4.0000e-004**	**2.5000e-004**	**2.5300e-003**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0618**	**0.0618**	**1.0000e-005**	**0.0000**	**0.0619**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					3.6000e-004	0.0000	3.6000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4400e-003	0.0347	0.0271	4.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	3.7142	3.7142	1.1200e-003	0.0000	3.7378
Total	**1.4400e-003**	**0.0347**	**0.0271**	**4.0000e-005**	**3.6000e-004**	**1.0700e-003**	**1.4300e-003**	**2.0000e-005**	**1.0700e-003**	**1.0900e-003**	**0.0000**	**3.7142**	**3.7142**	**1.1200e-003**	**0.0000**	**3.7378**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	1.7000e-004	1.3700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0168	0.0168	0.0000	0.0000	0.0168
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	8.0000e-005	1.1600e-003	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0450	0.0450	1.0000e-005	0.0000	0.0451
Total	**4.0000e-004**	**2.5000e-004**	**2.5300e-003**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0618**	**0.0618**	**1.0000e-005**	**0.0000**	**0.0619**

3.3 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.0800e-003	0.0160	0.0127	2.0000e-005		1.1300e-003	1.1300e-003		1.0900e-003	1.0900e-003	0.0000	1.6925	1.6925	3.4000e-004	0.0000	1.6996
Total	**2.0800e-003**	**0.0160**	**0.0127**	**2.0000e-005**		**1.1300e-003**	**1.1300e-003**		**1.0900e-003**	**1.0900e-003**	**0.0000**	**1.6925**	**1.6925**	**3.4000e-004**	**0.0000**	**1.6996**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	2.5000e-004	2.1100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0258	0.0258	0.0000	0.0000	0.0258
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	5.0000e-005	7.7000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0300	0.0300	0.0000	0.0000	0.0301
Total	**3.4000e-004**	**3.0000e-004**	**2.8800e-003**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0558**	**0.0558**	**0.0000**	**0.0000**	**0.0559**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.7000e-004	0.0109	0.0128	2.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	1.6925	1.6925	3.4000e-004	0.0000	1.6996
Total	**5.7000e-004**	**0.0109**	**0.0128**	**2.0000e-005**		**4.0000e-004**	**4.0000e-004**		**4.0000e-004**	**4.0000e-004**	**0.0000**	**1.6925**	**1.6925**	**3.4000e-004**	**0.0000**	**1.6996**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	1.3000e-004	2.5000e-004	2.1100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0258	0.0258	0.0000	0.0000	0.0258
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	5.0000e-005	7.7000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0300	0.0300	0.0000	0.0000	0.0301
Total	**3.4000e-004**	**3.0000e-004**	**2.8800e-003**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0558**	**0.0558**	**0.0000**	**0.0000**	**0.0559**

3.4 Trenching/Utilities - 2016

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Off-Road	5.9300e-003	0.0475	0.0363	6.0000e-005		3.5100e-003	3.5100e-003		3.4000e-003	3.4000e-003	0.0000	5.0108	5.0108	7.8000e-004	0.0000	5.0273
Total	**5.9300e-003**	**0.0475**	**0.0363**	**6.0000e-005**		**3.5100e-003**	**3.5100e-003**		**3.4000e-003**	**3.4000e-003**	**0.0000**	**5.0108**	**5.0108**	**7.8000e-004**	**0.0000**	**5.0273**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1000e-004	1.3000e-004	1.8500e-003	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0720	0.0720	1.0000e-005	0.0000	0.0722
Total	**5.1000e-004**	**1.3000e-004**	**1.8500e-003**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0720**	**0.0720**	**1.0000e-005**	**0.0000**	**0.0722**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8700e-003	0.0347	0.0371	6.0000e-005		1.4000e-003	1.4000e-003		1.4000e-003	1.4000e-003	0.0000	5.0108	5.0108	7.8000e-004	0.0000	5.0273
Total	**1.8700e-003**	**0.0347**	**0.0371**	**6.0000e-005**		**1.4000e-003**	**1.4000e-003**		**1.4000e-003**	**1.4000e-003**	**0.0000**	**5.0108**	**5.0108**	**7.8000e-004**	**0.0000**	**5.0273**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1000e-004	1.3000e-004	1.8500e-003	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0720	0.0720	1.0000e-005	0.0000	0.0722
Total	**5.1000e-004**	**1.3000e-004**	**1.8500e-003**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0720**	**0.0720**	**1.0000e-005**	**0.0000**	**0.0722**

3.5 Crossing Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0249	0.2726	0.1736	3.3000e-004		0.0141	0.0141		0.0133	0.0133	0.0000	30.7484	30.7484	7.8700e-003	0.0000	30.9137
Total	**0.0249**	**0.2726**	**0.1736**	**3.3000e-004**		**0.0141**	**0.0141**		**0.0133**	**0.0133**	**0.0000**	**30.7484**	**30.7484**	**7.8700e-003**	**0.0000**	**30.9137**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2600e-003	2.5400e-003	0.0211	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.2583	0.2583	1.0000e-005	0.0000	0.2584
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2600e-003**	**2.5400e-003**	**0.0211**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**4.0000e-005**	**1.0000e-005**	**1.0000e-005**	**2.0000e-005**	**0.0000**	**0.2583**	**0.2583**	**1.0000e-005**	**0.0000**	**0.2584**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.7300e-003	0.1859	0.2134	3.3000e-004		4.5700e-003	4.5700e-003		4.5700e-003	4.5700e-003	0.0000	30.7483	30.7483	7.8700e-003	0.0000	30.9136
Total	**7.7300e-003**	**0.1859**	**0.2134**	**3.3000e-004**		**4.5700e-003**	**4.5700e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**30.7483**	**30.7483**	**7.8700e-003**	**0.0000**	**30.9136**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2600e-003	2.5400e-003	0.0211	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.2583	0.2583	1.0000e-005	0.0000	0.2584
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2600e-003**	**2.5400e-003**	**0.0211**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**4.0000e-005**	**1.0000e-005**	**1.0000e-005**	**2.0000e-005**	**0.0000**	**0.2583**	**0.2583**	**1.0000e-005**	**0.0000**	**0.2584**

3.6 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.2000e-004	5.6000e-003	3.7000e-003	1.0000e-005		3.2000e-004	3.2000e-004		2.9000e-004	2.9000e-004	0.0000	0.5254	0.5254	1.6000e-004	0.0000	0.5287

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.2000e-004**	**5.6000e-003**	**3.7000e-003**	**1.0000e-005**		**3.2000e-004**	**3.2000e-004**		**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.5254**	**0.5254**	**1.6000e-004**	**0.0000**	**0.5287**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	0.0000	4.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.6000e-003	1.6000e-003	0.0000	0.0000	1.6000e-003
Total	**1.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.6000e-003**	**1.6000e-003**	**0.0000**	**0.0000**	**1.6000e-003**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.3000e-004	4.9200e-003	4.2300e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	0.5253	0.5253	1.6000e-004	0.0000	0.5287
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.3000e-004**	**4.9200e-003**	**4.2300e-003**	**1.0000e-005**		**1.6000e-004**	**1.6000e-004**		**1.6000e-004**	**1.6000e-004**	**0.0000**	**0.5253**	**0.5253**	**1.6000e-004**	**0.0000**	**0.5287**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	0.0000	4.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.6000e-003	1.6000e-003	0.0000	0.0000	1.6000e-003
Total	**1.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.6000e-003**	**1.6000e-003**	**0.0000**	**0.0000**	**1.6000e-003**

Jennings Ave Overcrossing (Night) - Santa Rosa

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.50	0.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 75

Climate Zone 4 **Operational Year** 2014

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 641.35 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Land Use - Lot acreage from project description

Construction Phase - Anticipated construction schedule provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Off-road Equipment - Proposed construction equipment list provided by project applicant.

Trips and VMT - 0.3 mile trip lengths to calculate risk from on-site vehicle travel.

Grading - Assume half of total grading (acres disturbed) could occur during night.

Construction Off-road Equipment Mitigation - Tier 4 mitigation for aerial lift, rough-terrain forklift, generators and light plants. Tier 2 mitigation for equipment >50 hp + BAAQMD BMPs

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstructionPhase	NumDays	200.00	90.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	4.00	15.00
tblConstructionPhase	NumDays	10.00	1.00
tblGrading	AcresOfGrading	2.25	1.50
tblLandUse	LotAcreage	0.00	1.50
tblOffRoadEquipment	HorsePower	171.00	84.00
tblOffRoadEquipment	HorsePower	171.00	130.00
tblOffRoadEquipment	HorsePower	171.00	84.00
tblOffRoadEquipment	HorsePower	171.00	84.00
tblOffRoadEquipment	HorsePower	87.00	50.00
tblOffRoadEquipment	HorsePower	167.00	84.00
tblOffRoadEquipment	LoadFactor	0.42	0.74
tblOffRoadEquipment	LoadFactor	0.42	0.36
tblOffRoadEquipment	LoadFactor	0.42	0.74
tblOffRoadEquipment	LoadFactor	0.42	0.74
tblOffRoadEquipment	LoadFactor	0.34	0.50
tblOffRoadEquipment	LoadFactor	0.40	0.74
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.80
tblOffRoadEquipment	UsageHours	8.00	1.40
tblOffRoadEquipment	UsageHours	6.00	1.20
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	0.80
tblOffRoadEquipment	UsageHours	8.00	0.60
tblOffRoadEquipment	UsageHours	7.00	1.20
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	HaulingTripLength	20.00	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	VendorTripLength	7.30	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30
tblTripsAndVMT	WorkerTripLength	12.40	0.30

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0547	0.5149	0.3284	5.0000e-004	9.1000e-004	0.0344	0.0353	1.2000e-004	0.0319	0.0321	0.0000	46.1167	46.1167	0.0125	0.0000	46.3801
Total	**0.0547**	**0.5149**	**0.3284**	**5.0000e-004**	**9.1000e-004**	**0.0344**	**0.0353**	**1.2000e-004**	**0.0319**	**0.0321**	**0.0000**	**46.1167**	**46.1167**	**0.0125**	**0.0000**	**46.3801**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0115	0.1875	0.3485	5.0000e-004	4.7000e-004	5.2200e-003	5.6900e-003	5.0000e-005	5.2200e-003	5.2700e-003	0.0000	46.1167	46.1167	0.0125	0.0000	46.3800
Total	**0.0115**	**0.1875**	**0.3485**	**5.0000e-004**	**4.7000e-004**	**5.2200e-003**	**5.6900e-003**	**5.0000e-005**	**5.2200e-003**	**5.2700e-003**	**0.0000**	**46.1167**	**46.1167**	**0.0125**	**0.0000**	**46.3800**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**78.93**	**63.58**	**-6.10**	**0.00**	**48.35**	**84.82**	**83.88**	**58.33**	**83.66**	**83.56**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

1	Site Prep/Grading/Excavation	Grading	6/1/2016	6/21/2016	5	15	
2	Demolition	Demolition	6/22/2016	7/5/2016	5	10	
3	Trenching/Utilities	Trenching	7/6/2016	8/2/2016	5	20	
4	Crossing Construction	Building Construction	8/3/2016	12/6/2016	5	90	
5	Paving	Paving	12/7/2016	12/7/2016	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep/Grading/Excavation	Crawler Tractors	1	1.20	208	0.43
Site Prep/Grading/Excavation	Excavators	1	1.20	162	0.38
Site Prep/Grading/Excavation	Graders	1	1.20	174	0.41
Site Prep/Grading/Excavation	Other Construction Equipment	2	1.60	84	0.74
Site Prep/Grading/Excavation	Rubber Tired Dozers	0	6.00	255	0.40
Site Prep/Grading/Excavation	Sweepers/Scrubbers	1	0.40	64	0.46
Site Prep/Grading/Excavation	Tractors/Loaders/Backhoes	2	1.20	97	0.37
Demolition	Air Compressors	1	0.70	78	0.48
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	1	0.70	162	0.38
Demolition	Generator Sets	1	0.80	84	0.74
Demolition	Other Construction Equipment	1	0.80	130	0.36
Demolition	Other General Industrial Equipment	1	0.40	50	0.50
Demolition	Other Material Handling Equipment	2	0.80	84	0.74
Demolition	Rubber Tired Dozers	0	8.00	255	0.40
Demolition	Sweepers/Scrubbers	1	0.20	64	0.46
Demolition	Tractors/Loaders/Backhoes	1	0.60	97	0.37

Trenching/Utilities	Generator Sets	1	0.90	84	0.74
Trenching/Utilities	Other Construction Equipment	2	1.20	84	0.74
Trenching/Utilities	Plate Compactors	1	0.60	8	0.43
Trenching/Utilities	Pumps	2	0.60	84	0.74
Trenching/Utilities	Sweepers/Scrubbers	1	0.30	64	0.46
Trenching/Utilities	Tractors/Loaders/Backhoes	1	0.90	97	0.37
Trenching/Utilities	Tractors/Loaders/Backhoes	1	0.60	97	0.37
Crossing Construction	Aerial Lifts	1	1.40	62	0.31
Crossing Construction	Bore/Drill Rigs	1	1.20	205	0.50
Crossing Construction	Cranes	1	0.80	226	0.29
Crossing Construction	Excavators	1	1.10	162	0.38
Crossing Construction	Forklifts	0	6.00	89	0.20
Crossing Construction	Generator Sets	1	1.40	84	0.74
Crossing Construction	Other Construction Equipment	2	2.80	84	0.74
Crossing Construction	Rough Terrain Forklifts	1	1.40	100	0.40
Crossing Construction	Tractors/Loaders/Backhoes	1	0.80	97	0.37
Crossing Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	0	8.00	125	0.42
Paving	Paving Equipment	0	8.00	130	0.36
Paving	Rollers	0	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Prep/Grading/Excavati	8	20.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Demolition	9	23.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Trenching/Utilities	9	23.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT
Crossing Construction	9	0.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT

Paving	0	0.00	0.00	0.00	0.30	0.30	0.30	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Clean Paved Roads

3.2 Site Prep/Grading/Excavation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.0000e-004	0.0000	8.0000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6100e-003	0.0568	0.0317	5.0000e-005		3.6200e-003	3.6200e-003		3.3300e-003	3.3300e-003	0.0000	4.2991	4.2991	1.3000e-003	0.0000	4.3263
Total	**5.6100e-003**	**0.0568**	**0.0317**	**5.0000e-005**	**8.0000e-004**	**3.6200e-003**	**4.4200e-003**	**9.0000e-005**	**3.3300e-003**	**3.4200e-003**	**0.0000**	**4.2991**	**4.2991**	**1.3000e-003**	**0.0000**	**4.3263**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Worker	4.3000e-004	1.1000e-004	1.5400e-003	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0600	0.0600	1.0000e-005	0.0000	0.0602
Total	**4.3000e-004**	**1.1000e-004**	**1.5400e-003**	**0.0000**	**3.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0600**	**0.0600**	**1.0000e-005**	**0.0000**	**0.0602**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.6000e-004	0.0000	3.6000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2800e-003	0.0269	0.0325	5.0000e-005		8.3000e-004	8.3000e-004		8.3000e-004	8.3000e-004	0.0000	4.2991	4.2991	1.3000e-003	0.0000	4.3263
Total	**1.2800e-003**	**0.0269**	**0.0325**	**5.0000e-005**	**3.6000e-004**	**8.3000e-004**	**1.1900e-003**	**2.0000e-005**	**8.3000e-004**	**8.5000e-004**	**0.0000**	**4.2991**	**4.2991**	**1.3000e-003**	**0.0000**	**4.3263**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-004	1.1000e-004	1.5400e-003	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0600	0.0600	1.0000e-005	0.0000	0.0602
Total	**4.3000e-004**	**1.1000e-004**	**1.5400e-003**	**0.0000**	**3.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0600**	**0.0600**	**1.0000e-005**	**0.0000**	**0.0602**

3.3 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8200e-003	0.0156	0.0119	2.0000e-005		1.0900e-003	1.0900e-003		1.0300e-003	1.0300e-003	0.0000	1.5400	1.5400	3.8000e-004	0.0000	1.5479
Total	**1.8200e-003**	**0.0156**	**0.0119**	**2.0000e-005**		**1.0900e-003**	**1.0900e-003**		**1.0300e-003**	**1.0300e-003**	**0.0000**	**1.5400**	**1.5400**	**3.8000e-004**	**0.0000**	**1.5479**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	8.0000e-005	1.1800e-003	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0460	0.0460	1.0000e-005	0.0000	0.0461
Total	**3.3000e-004**	**8.0000e-005**	**1.1800e-003**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0460**	**0.0460**	**1.0000e-005**	**0.0000**	**0.0461**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	5.6000e-004	0.0108	0.0120	2.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.5400	1.5400	3.8000e-004	0.0000	1.5479
Total	**5.6000e-004**	**0.0108**	**0.0120**	**2.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.5400**	**1.5400**	**3.8000e-004**	**0.0000**	**1.5479**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	8.0000e-005	1.1800e-003	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0460	0.0460	1.0000e-005	0.0000	0.0461
Total	**3.3000e-004**	**8.0000e-005**	**1.1800e-003**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0460**	**0.0460**	**1.0000e-005**	**0.0000**	**0.0461**

3.4 Trenching/Utilities - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.8600e-003	0.0412	0.0284	4.0000e-005		3.1300e-003	3.1300e-003		2.9600e-003	2.9600e-003	0.0000	3.6553	3.6553	7.9000e-004	0.0000	3.6719
Total	**4.8600e-003**	**0.0412**	**0.0284**	**4.0000e-005**		**3.1300e-003**	**3.1300e-003**		**2.9600e-003**	**2.9600e-003**	**0.0000**	**3.6553**	**3.6553**	**7.9000e-004**	**0.0000**	**3.6719**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.7000e-004	2.3600e-003	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0920	0.0920	1.0000e-005	0.0000	0.0923
Total	**6.6000e-004**	**1.7000e-004**	**2.3600e-003**	**0.0000**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0920**	**0.0920**	**1.0000e-005**	**0.0000**	**0.0923**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0000e-003	0.0157	0.0281	4.0000e-005		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	3.6553	3.6553	7.9000e-004	0.0000	3.6719
Total	**1.0000e-003**	**0.0157**	**0.0281**	**4.0000e-005**		**6.2000e-004**	**6.2000e-004**		**6.2000e-004**	**6.2000e-004**	**0.0000**	**3.6553**	**3.6553**	**7.9000e-004**	**0.0000**	**3.6719**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.7000e-004	2.3600e-003	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0920	0.0920	1.0000e-005	0.0000	0.0923
Total	**6.6000e-004**	**1.7000e-004**	**2.3600e-003**	**0.0000**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0920**	**0.0920**	**1.0000e-005**	**0.0000**	**0.0923**

3.5 Crossing Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0410	0.4010	0.2514	3.9000e-004		0.0265	0.0265		0.0246	0.0246	0.0000	36.4243	36.4243	0.0101	0.0000	36.6354
Total	**0.0410**	**0.4010**	**0.2514**	**3.9000e-004**		**0.0265**	**0.0265**		**0.0246**	**0.0246**	**0.0000**	**36.4243**	**36.4243**	**0.0101**	**0.0000**	**36.6354**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2600e-003	0.1338	0.2708	3.9000e-004		3.3500e-003	3.3500e-003		3.3500e-003	3.3500e-003	0.0000	36.4243	36.4243	0.0101	0.0000	36.6354
Total	**7.2600e-003**	**0.1338**	**0.2708**	**3.9000e-004**		**3.3500e-003**	**3.3500e-003**		**3.3500e-003**	**3.3500e-003**	**0.0000**	**36.4243**	**36.4243**	**0.0101**	**0.0000**	**36.6354**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment 2: Construction Health Risk Assessment Calculations

At-Grade Crossing - Construction Impacts

Jennings Ave, Santa Rosa, CA
At Grade Crossing

DPM Construction Emissions and Modeling Emission Rates

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2016	Const - Day Area 1	0.0004	AG1D_DPM	0.9	0.00019	2.45E-05	228	1.08E-07
	Const - Day Area 2	0.0002	AG2D_DPM	0.4	0.00009	1.17E-05	109	1.08E-07
	Const - Day Area 3	0.0002	AG13_DPM	0.5	0.00011	1.35E-05	125	1.08E-07
	Const - Day Area 4	0.0001	AG4D_DPM	0.3	0.00007	8.47E-06	79	1.08E-07
	Const - Day Area 5	0.0003	AG5D_DPM	0.6	0.00014	1.72E-05	160	1.08E-07
	Const - Day Area 6	0.0003	AG6D_DPM	0.5	0.00012	1.49E-05	139	1.08E-07
		0.0016		3.14			839	
2016	Const - Night Area 1	0.0062	AG1N_DPM	12.5	0.00342	4.31E-04	1,087	3.96E-07
Total		***0.0078***		***15.6***	***0.0041***	***0.0005***		

Notes:
Emissions assumed to be evenly distributed over each construction area

	Day	Night
Schedule =	7am - 7pm	8pm - 6am
hr/day =	12	10
days/yr =	365	365
hours/year =	4380	3650

PM2.5 Fugitive Dust Construction Emissions for Modeling

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	(lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2016	Const - Day Area 1	AG1D_FUG	0.000000	0.0000	0.00000	0.00E+00	228	0.00E+00
	Const - Day Area 2	AG2D_FUG	0.000000	0.0000	0.00000	0.00E+00	109	0.00E+00
	Const - Day Area 3	AG3D_FUG	0.000000	0.0000	0.00000	0.00E+00	125	0.00E+00
	Const - Day Area 4	AG4D_FUG	0.000000	0.0000	0.00000	0.00E+00	79	0.00E+00
	Const - Day Area 5	AG5D_FUG	0.000000	0.0000	0.00000	0.00E+00	160	0.00E+00
	Const - Day Area 6	AG6D_FUG	0.000000	0.0000	0.00000	0.00E+00	139	0.00E+00
			0.00000				839	
	Const - Night Area 1	AG5D_FUG	0.00001	0.0200	0.00001	6.90E-07	1,087	6.35E-10
Total			***0.00001***	***0.02***	***0.0000***	***0.0000***		

Notes:
Emissions assumed to be evenly distributed over each construction area

	Day	Night
Schedule =	7am - 7pm	8pm - 6am
hr/day =	12	10
days/yr =	365	365
hours/year =	4380	3650

Jennings Ave, Santa Rosa, CA
At Grade Crossing

Construction Health Impact Summary - Residenital Receptors

Construction Year	Maximum Concentrations: Exhaust PM2.5/DPM (μg/m^3)	Maximum Concentrations: Fugitive PM2.5 (μg/m^3)	Cancer Risk (per million): Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration (μg/m^3)
2014	0.0669	0.0161	**5.9**	**0.3**	0.013	0.083
Maximum Annual	0.0669	0.0161	-	-	**0.013**	**0.083**

Jennings Ave, Santa Rosa, CA -At Grade Crossing - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Off-Site Residential Receptor Locations - 1.5 meters

Cancer Risk (per million) = CPF x Inhalation Dose x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Values

Parameter	Child	Adult
CPF =	1.10E+00	1.10E+00
DBR =	581	302
A =	1	1
EF =	350	350
AT =	25,550	25,550

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Child - Exposure Information DPM Conc (ug/m3) Year	Annual	Exposure Adjust Factor	Child Cancer Risk (per million)	Adult - Exposure Information Modeled DPM Conc (ug/m3) Year	Annual	Exposure Adjust Factor	Adult Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
1	1	2016	0.0669	10	5.86	2016	0.0669	1	0.30	0.0161	0.083
2	1		0.0000	10	0.00		0.0000	1	0.00		
3	1		0.0000	4.75	0.00		0.0000	1	0.00		
4	1		0.0000	3	0.00		0.0000	1	0.00		
5	1		0.0000	3	0.00		0.0000	1	0.00		
6	1		0.0000	3	0.00		0.0000	1	0.00		
7	1		0.0000	3	0.00		0.0000	1	0.00		
8	1		0.0000	3	0.00		0.0000	1	0.00		
9	1		0.0000	3	0.00		0.0000	1	0.00		
10	1		0.0000	3	0.00		0.0000	1	0.00		
11	1		0.0000	3	0.00		0.0000	1	0.00		
12	1		0.0000	3	0.00		0.0000	1	0.00		
13	1		0.0000	3	0.00		0.0000	1	0.00		
14	1		0.0000	3	0.00		0.0000	1	0.00		
15	1		0.0000	3	0.00		0.0000	1	0.00		
16	1		0.0000	3	0.00		0.0000	1	0.00		
17	1		0.0000	1.5	0.00		0.0000	1	0.00		
18	1		0.0000	1	0.00		0.0000	1	0.00		
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65	1		0.0000	1	0.00		0.0000	1	0.00		
66	1		0.0000	1	0.00		0.0000	1	0.00		
67	1		0.0000	1	0.00		0.0000	1	0.00		
68	1		0.0000	1	0.00		0.0000	1	0.00		
69	1		0.0000	1	0.00		0.0000	1	0.00		
70	1		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk					**5.86**				**0.30**		

Jennings Ave, Santa Rosa, CA -At Grade Crossing - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Off-Site Residential Receptor Locations - 4.5 meters

Cancer Risk (per million) = CPF x Inhalation Dose x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Values

Parameter	Child	Adult
CPF =	1.10E+00	1.10E+00
DBR =	581	302
A =	1	1
EF =	350	350
AT =	25,550	25,550

Construction Cancer Risk by Year - Maximum Impact Receptor Location

		Child - Exposure Information			Child	Adult - Exposure Information			Adult		
	Exposure			Exposure	Cancer	Modeled		Exposure	Cancer		
Exposure	Duration	DPM Conc (ug/m3)		Adjust	Risk	DPM Conc (ug/m3)		Adjust	Risk	Fugitive	Total
Year	(years)	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	PM2.5	PM2.5
1	1	2016	0.0454	10	3.97	2016	0.0454	1	0.21	0.0161	0.062
2	1		0.0000	10	0.00		0.0000	1	0.00		
3	1		0.0000	4.75	0.00		0.0000	1	0.00		
4	1		0.0000	3	0.00		0.0000	1	0.00		
5	1		0.0000	3	0.00		0.0000	1	0.00		
6	1		0.0000	3	0.00		0.0000	1	0.00		
7	1		0.0000	3	0.00		0.0000	1	0.00		
8	1		0.0000	3	0.00		0.0000	1	0.00		
9	1		0.0000	3	0.00		0.0000	1	0.00		
10	1		0.0000	3	0.00		0.0000	1	0.00		
11	1		0.0000	3	0.00		0.0000	1	0.00		
12	1		0.0000	3	0.00		0.0000	1	0.00		
13	1		0.0000	3	0.00		0.0000	1	0.00		
14	1		0.0000	3	0.00		0.0000	1	0.00		
15	1		0.0000	3	0.00		0.0000	1	0.00		
16	1		0.0000	3	0.00		0.0000	1	0.00		
17	1		0.0000	1.5	0.00		0.0000	1	0.00		
18	1		0.0000	1	0.00		0.0000	1	0.00		
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65	1		0.0000	1	0.00		0.0000	1	0.00		
66	1		0.0000	1	0.00		0.0000	1	0.00		
67	1		0.0000	1	0.00		0.0000	1	0.00		
68	1		0.0000	1	0.00		0.0000	1	0.00		
69	1		0.0000	1	0.00		0.0000	1	0.00		
70	1		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk					**3.97**				**0.21**		

Jennings Ave, Santa Rosa, CA -At Grade Crossing - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Child Receptor Locations - Day Care

Cancer Risk (per million) = CPF x Inhalation Dose x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Values

Parameter	Child	Adult
CPF =	1.10E+00	1.10E+00
DBR =	581	302
A =	1	1
EF =	350	350
AT =	25,550	25,550

Construction Cancer Risk by Year - Student Exposure

Year	Exposure Exposure Duration (years)	Student - Exposure Information DPM Conc (ug/m3) Year	Conc	Exposure Adjust Factor*	Student Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
1	1	2014	0.0580	3	1.52	0.0128	0.071
2	1		0.0000	3	0.00		
3	1		0.0000	3	0.00		
4	1		0.000	3	0.00		
5	1		0.000	3	0.00		
6	1		0.000	3	0.00		
7	1		0.000	1	0.00		
8	1		0.000	1	0.00		
9	1		0.000	1	0.00		
10	1		0.000	1	0.00		
11	1		0.000	1	0.00		
12	1		0.000	1	0.00		
13	1		0.000	1	0.00		
14	1		0.000	1	0.00		
15	1		0.000	1	0.00		
16	1		0.000	1	0.00		
17	1		0.000	1	0.00		
18	1		0.000	1	0.00		
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65	1		0.000	1	0.00		
66	1		0.000	1	0.00		
67	1		0.000	1	0.00		
68	1		0.000	1	0.00		
69	1		0.000	1	0.00		
70	1		0.000	1	0.00		
Total Increased Cancer Risk					**1.5**		

* Assumes that students at school are younger than 16 years of age for entire construction period

Over-Crossing Alternative – Construction Impacts

Jennings Ave, Santa Rosa, CA
Over Crossing Alternative

DPM Construction Emissions and Modeling Emission Rates - Unmitigated

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2016	Const - Day Area 1	0.0193	OCD1_DPM	38.6	0.00881	1.11E-03	2,268	4.89E-07
	Const - Day Area 2	0.0012	OCD2_DPM	2.4	0.00055	6.94E-05	142	4.89E-07
		0.0205		41.00			2,410	
2016	Const - Night Area 1	0.0319	OCN1_DPM	63.8	0.01748	2.20E-03	2,143	1.03E-06
Total		***0.0524***		***104.8***	***0.0268***	***0.0034***		

Notes:
Emissions assumed to be evenly distributed over each construction area

	Day	Night
Schedule =	7am - 7pm	8pm - 6am
hr/day =	12	10
days/yr =	365	365
hours/year =	4380	3650

PM2.5 Fugitive Dust Construction Emissions for Modeling - Unmitigated

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2016	Const - Day Area 1	OCD1_FUG	0.000113	0.2259	0.00005	6.50E-06	2,268	2.86E-09
	Const - Day Area 2	OCD2_FUG	0.000007	0.0141	0.00000	4.06E-07	142	2.86E-09
			0.00012	0.24			2,410	
	Const - Night Area 1	OCN1_FUG	0.000120	0.2400	0.00007	8.28E-06	2,143	3.87E-09
Total			***0.0002***	***0.48***	***0.0001***	***0.0000***		

Notes:
Emissions assumed to be evenly distributed over each construction area

	Day	Night
Schedule =	7am - 7pm	8pm - 6am
hr/day =	12	10
days/yr =	365	365
hours/year =	4380	3650

DPM Construction Emissions and Modeling Emission Rates - Mitigated

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2016	Const - Day Area 1	0.0072	OCD1_DPM	14.3	0.00327	4.13E-04	2,268	1.82E-07
	Const - Day Area 2	0.0004	OCD2_DPM	0.9	0.00020	2.58E-05	142	1.82E-07
		0.0076		15.24			2,410	
2016	Const - Night Area 1	0.0052	OCN1_DPM	10.4	0.00286	3.60E-04	2,143	1.68E-07
Total				***40.9***	***0.0063***	***0.0008***		

Notes:

Emissions assumed to be evenly distributed over each construction area

	Day	Night
Schedule =	7am - 7pm	8pm - 6am
hr/day =	12	10
days/yr =	365	365
hours/year =	4380	3650

PM2.5 Fugitive Dust Construction Emissions for Modeling - Mitigated

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2016	Const - Day Area 1	OCD1_FUG	0.000047	0.0941	0.00002	2.71E-06	2,268	1.19E-09
	Const - Day Area 2	OCD2_FUG	0.000003	0.0059	0.00000	1.69E-07	142	1.19E-09
			0.00005				2,410	
	Const - Night Area 1	OCN1_FUG	0.000050	0.1000	0.00003	3.45E-06	2,143	1.61E-09
Total				***0.20***	***0.0001***	***0.0000***		

Notes:

Emissions assumed to be evenly distributed over each construction area

	Day	Night
Schedule =	7am - 7pm	8pm - 6am
hr/day =	12	10
days/yr =	365	365
hours/year =	4380	3650

Jennings Ave, Santa Rosa, CA
Over Crossing Alternative - Construction Health Impact Summary

Construction Health Impact Summary - Residential Receptors

Construction Year	UNMITIGATED					
	Maximum Concentrations		Cancer Risk (per million)		Hazard Index (-)	Maximum Annual PM2.5 Concentration (μg/m^3)
	Exhaust PM2.5/DPM (μg/m^3)	Fugitive PM2.5 (μg/m^3)	Child	Adult		
2015	0.3249	0.0028	**28.4**	**1.5**	0.065	0.328
Maximum Annual	0.3249	0.0028	-	-	**0.065**	**0.328**

Construction Health Impact Summary - Residential Receptors

Construction Year	MITIGATED					
	Maximum Concentrations		Cancer Risk (per million)		Hazard Index (-)	Maximum Annual PM2.5 Concentration (μg/m^3)
	Exhaust PM2.5/DPM (μg/m^3)	Fugitive PM2.5 (μg/m^3)	Child	Adult		
2015	0.0936	0.0006	**8.2**	**0.4**	0.019	0.094
Maximum Annual	0.0936	0.0006	-	-	**0.019**	**0.094**

Maximum Impacts at Day Care Child Receptor

Construction Year	UNMITIGATED					
	Maximum Concentrations		Cancer Risk (per million)		Hazard Index (-)	Maximum Annual PM2.5 Concentration (μg/m^3)
	Exhaust PM2.5/DPM (μg/m^3)	Fugitive PM2.5 (μg/m^3)	Child	Adult		
2015	0.3194	0.0035	**8.4**	-	0.064	0.323
Maximum Annual	0.3194	0.0035			**0.064**	**0.323**
Construction Year	MITIGATED					
	Maximum Concentrations		Cancer Risk (per million)		Hazard Index (-)	Maximum Annual PM2.5 Concentration (μg/m^3)
	Exhaust PM2.5/DPM (μg/m^3)	Fugitive PM2.5 (μg/m^3)	Child	Adult		
2015	0.0629	0.0014	**1.7**	-	0.013	0.064
Maximum Annual	0.0629	0.0014			**0.013**	**0.064**

Jennings Ave, Santa Rosa, CA -Over Crossing Alternative - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Off-Site Residential Receptor Locations - 1.5 meters

Cancer Risk (per million) = CPF x Inhalation Dose x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Values

Parameter	Child	Adult
CPF =	1.10E+00	1.10E+00
DBR =	581	302
A =	1	1
EF =	350	350
AT =	25,550	25,550

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Child - Exposure Information DPM Conc (ug/m3) Year	Annual	Exposure Adjust Factor	Child Cancer Risk (per million)	Adult - Exposure Information Modeled DPM Conc (ug/m3) Year	Annual	Exposure Adjust Factor	Adult Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
1	1	2015	0.3249	10	28.44	2015	0.3249	1	1.48	0.0028	0.328
2	1		0.0000	10	0.00		0.0000	1	0.00		
3	1		0.0000	4.75	0.00		0.0000	1	0.00		
4	1		0.0000	3	0.00		0.0000	1	0.00		
5	1		0.0000	3	0.00		0.0000	1	0.00		
6	1		0.0000	3	0.00		0.0000	1	0.00		
7	1		0.0000	3	0.00		0.0000	1	0.00		
8	1		0.0000	3	0.00		0.0000	1	0.00		
9	1		0.0000	3	0.00		0.0000	1	0.00		
10	1		0.0000	3	0.00		0.0000	1	0.00		
11	1		0.0000	3	0.00		0.0000	1	0.00		
12	1		0.0000	3	0.00		0.0000	1	0.00		
13	1		0.0000	3	0.00		0.0000	1	0.00		
14	1		0.0000	3	0.00		0.0000	1	0.00		
15	1		0.0000	3	0.00		0.0000	1	0.00		
16	1		0.0000	3	0.00		0.0000	1	0.00		
17	1		0.0000	1.5	0.00		0.0000	1	0.00		
18	1		0.0000	1	0.00		0.0000	1	0.00		
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65	1		0.0000	1	0.00		0.0000	1	0.00		
66	1		0.0000	1	0.00		0.0000	1	0.00		
67	1		0.0000	1	0.00		0.0000	1	0.00		
68	1		0.0000	1	0.00		0.0000	1	0.00		
69	1		0.0000	1	0.00		0.0000	1	0.00		
70	1		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk					**28.44**				**1.48**		

Jennings Ave, Santa Rosa, CA -Over Crossing Alternative - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Off-Site Residential Receptor Locations - 4.5 meters

Cancer Risk (per million) = CPF x Inhalation Dose x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Values

Parameter	Child	Adult
CPF =	1.10E+00	1.10E+00
DBR =	581	302
A =	1	1
EF =	350	350
AT =	25,550	25,550

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Child - Exposure Information: DPM Conc (ug/m3) Year	Child - Exposure Information: DPM Conc (ug/m3) Annual	Child - Exposure Information: Exposure Adjust Factor	Child Cancer Risk (per million)	Adult - Exposure Information: Modeled DPM Conc (ug/m3) Year	Adult - Exposure Information: Modeled DPM Conc (ug/m3) Annual	Adult - Exposure Information: Exposure Adjust Factor	Adult Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
1	1	2015	0.3044	10	26.65	2015	0.3044	1	1.39	0.0015	0.306
2	1		0.0000	10	0.00		0.0000	1	0.00		
3	1		0.0000	4.75	0.00		0.0000	1	0.00		
4	1		0.0000	3	0.00		0.0000	1	0.00		
5	1		0.0000	3	0.00		0.0000	1	0.00		
6	1		0.0000	3	0.00		0.0000	1	0.00		
7	1		0.0000	3	0.00		0.0000	1	0.00		
8	1		0.0000	3	0.00		0.0000	1	0.00		
9	1		0.0000	3	0.00		0.0000	1	0.00		
10	1		0.0000	3	0.00		0.0000	1	0.00		
11	1		0.0000	3	0.00		0.0000	1	0.00		
12	1		0.0000	3	0.00		0.0000	1	0.00		
13	1		0.0000	3	0.00		0.0000	1	0.00		
14	1		0.0000	3	0.00		0.0000	1	0.00		
15	1		0.0000	3	0.00		0.0000	1	0.00		
16	1		0.0000	3	0.00		0.0000	1	0.00		
17	1		0.0000	1.5	0.00		0.0000	1	0.00		
18	1		0.0000	1	0.00		0.0000	1	0.00		
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65	1		0.0000	1	0.00		0.0000	1	0.00		
66	1		0.0000	1	0.00		0.0000	1	0.00		
67	1		0.0000	1	0.00		0.0000	1	0.00		
68	1		0.0000	1	0.00		0.0000	1	0.00		
69	1		0.0000	1	0.00		0.0000	1	0.00		
70	1		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk					**26.65**				**1.39**		

Jennings Ave, Santa Rosa, CA -Over Crossing Alternative - Mitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Off-Site Residential Receptor Locations - 1.5 meters

Cancer Risk (per million) = CPF x Inhalation Dose x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Values

Parameter	Child	Adult
CPF =	1.10E+00	1.10E+00
DBR =	581	302
A =	1	1
EF =	350	350
AT =	25,550	25,550

Construction Cancer Risk by Year - Maximum Impact Receptor Location

		Child - Exposure Information			Child	Adult - Exposure Information			Adult		
	Exposure			Exposure	Cancer	Modeled		Exposure	Cancer	Mitigated	
Exposure	Duration	DPM Conc (ug/m3)		Adjust	Risk	DPM Conc (ug/m3)		Adjust	Risk	Fugitive	Total
Year	(years)	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	PM2.5	PM2.5
1	1	2015	0.0633	10	5.54	2015	0.0633	1	0.29	0.0012	0.064
2	1		0.0000	10	0.00		0.0000	1	0.00		
3	1		0.0000	4.75	0.00		0.0000	1	0.00		
4	1		0.0000	3	0.00		0.0000	1	0.00		
5	1		0.0000	3	0.00		0.0000	1	0.00		
6	1		0.0000	3	0.00		0.0000	1	0.00		
7	1		0.0000	3	0.00		0.0000	1	0.00		
8	1		0.0000	3	0.00		0.0000	1	0.00		
9	1		0.0000	3	0.00		0.0000	1	0.00		
10	1		0.0000	3	0.00		0.0000	1	0.00		
11	1		0.0000	3	0.00		0.0000	1	0.00		
12	1		0.0000	3	0.00		0.0000	1	0.00		
13	1		0.0000	3	0.00		0.0000	1	0.00		
14	1		0.0000	3	0.00		0.0000	1	0.00		
15	1		0.0000	3	0.00		0.0000	1	0.00		
16	1		0.0000	3	0.00		0.0000	1	0.00		
17	1		0.0000	1.5	0.00		0.0000	1	0.00		
18	1		0.0000	1	0.00		0.0000	1	0.00		
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65	1		0.0000	1	0.00		0.0000	1	0.00		
66	1		0.0000	1	0.00		0.0000	1	0.00		
67	1		0.0000	1	0.00		0.0000	1	0.00		
68	1		0.0000	1	0.00		0.0000	1	0.00		
69	1		0.0000	1	0.00		0.0000	1	0.00		
70	1		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk					**5.54**				**0.29**		

Jennings Ave, Santa Rosa, CA -Over Crossing Alternative - Mitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Off-Site Residential Receptor Locations - 4.5 meters

Cancer Risk (per million) = CPF x Inhalation Dose x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Values

Parameter	Child	Adult
CPF =	1.10E+00	1.10E+00
DBR =	581	302
A =	1	1
EF =	350	350
AT =	25,550	25,550

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Child - Exposure Information DPM Conc (ug/m3) Year	Annual	Exposure Adjust Factor	Child Cancer Risk (per million)	Adult - Exposure Information Modeled DPM Conc (ug/m3) Year	Annual	Exposure Adjust Factor	Adult Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
1	1	2015	0.0936	10	8.19	2016	0.0936	1	0.43	0.0006	0.094
2	1		0.0000	10	0.00		0.0000	1	0.00		
3	1		0.0000	4.75	0.00		0.0000	1	0.00		
4	1		0.0000	3	0.00		0.0000	1	0.00		
5	1		0.0000	3	0.00		0.0000	1	0.00		
6	1		0.0000	3	0.00		0.0000	1	0.00		
7	1		0.0000	3	0.00		0.0000	1	0.00		
8	1		0.0000	3	0.00		0.0000	1	0.00		
9	1		0.0000	3	0.00		0.0000	1	0.00		
10	1		0.0000	3	0.00		0.0000	1	0.00		
11	1		0.0000	3	0.00		0.0000	1	0.00		
12	1		0.0000	3	0.00		0.0000	1	0.00		
13	1		0.0000	3	0.00		0.0000	1	0.00		
14	1		0.0000	3	0.00		0.0000	1	0.00		
15	1		0.0000	3	0.00		0.0000	1	0.00		
16	1		0.0000	3	0.00		0.0000	1	0.00		
17	1		0.0000	1.5	0.00		0.0000	1	0.00		
18	1		0.0000	1	0.00		0.0000	1	0.00		
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65	1		0.0000	1	0.00		0.0000	1	0.00		
66	1		0.0000	1	0.00		0.0000	1	0.00		
67	1		0.0000	1	0.00		0.0000	1	0.00		
68	1		0.0000	1	0.00		0.0000	1	0.00		
69	1		0.0000	1	0.00		0.0000	1	0.00		
70	1		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk					**8.19**				**0.43**		

Jennings Ave, Santa Rosa, CA -Over Crossing Alternative - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Child Receptor Locations - Day Care

Cancer Risk (per million) = CPF x Inhalation Dose x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Values

Parameter	Child	Adult
CPF =	1.10E+00	1.10E+00
DBR =	581	302
A =	1	1
EF =	350	350
AT =	25,550	25,550

Construction Cancer Risk by Year - Student Exposure

Year	Exposure Exposure Duration (years)	Student - Exposure Information DPM Conc (ug/m3) Year	Conc	Exposure Adjust Factor*	Student Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
1	1	2014	0.3194	3	8.39	0.0035	0.323
2	1		0.0000	3	0.00		
3	1		0.0000	3	0.00		
4	1		0.000	3	0.00		
5	1		0.000	3	0.00		
6	1		0.000	3	0.00		
7	1		0.000	1	0.00		
8	1		0.000	1	0.00		
9	1		0.000	1	0.00		
10	1		0.000	1	0.00		
11	1		0.000	1	0.00		
12	1		0.000	1	0.00		
13	1		0.000	1	0.00		
14	1		0.000	1	0.00		
15	1		0.000	1	0.00		
16	1		0.000	1	0.00		
17	1		0.000	1	0.00		
18	1		0.000	1	0.00		
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.•	.•	.•	.•	.•	.•		
.•	.•	.•	.•	.•	.•		
65	1		0.000	1	0.00		
66	1		0.000	1	0.00		
67	1		0.000	1	0.00		
68	1		0.000	1	0.00		
69	1		0.000	1	0.00		
70	1		0.000	1	0.00		
Total Increased Cancer Risk					**8.4**		

* Assumes that students at school are younger than 16 years of age for entire construction period

Jennings Ave, Santa Rosa, CA -Over Crossing Alternative - Mitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Child Receptor Locations - Day Care

Cancer Risk (per million) = CPF x Inhalation Dose x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Values

Parameter	Child	Adult
CPF =	1.10E+00	1.10E+00
DBR =	581	302
A =	1	1
EF =	350	350
AT =	25,550	25,550

Construction Cancer Risk by Year - Student Exposure

Year	Exposure Exposure Duration (years)	Student - Exposure Information DPM Conc (ug/m3) Year	Conc	Exposure Adjust Factor*	Student Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
1	1	2014	0.0629	3	1.65	0.0014	0.064
2	1		0.0000	3	0.00		
3	1		0.0000	3	0.00		
4	1		0.000	3	0.00		
5	1		0.000	3	0.00		
6	1		0.000	3	0.00		
7	1		0.000	1	0.00		
8	1		0.000	1	0.00		
9	1		0.000	1	0.00		
10	1		0.000	1	0.00		
11	1		0.000	1	0.00		
12	1		0.000	1	0.00		
13	1		0.000	1	0.00		
14	1		0.000	1	0.00		
15	1		0.000	1	0.00		
16	1		0.000	1	0.00		
17	1		0.000	1	0.00		
18	1		0.000	1	0.00		
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.•	.•	.•	.•	.•	.•		
65	1		0.000	1	0.00		
66	1		0.000	1	0.00		
67	1		0.000	1	0.00		
68	1		0.000	1	0.00		
69	1		0.000	1	0.00		
70	1		0.000	1	0.00		
Total Increased Cancer Risk					**1.7**		

* Assumes that students at school are younger than 16 years of age for entire construction period

Appendix D

Special Status Species Tables and Tree Removal Figures

Table D-1 - Potentially Occurring Special-Status Plant Species in the Study Area

Scientific Name **Common Name**	**Status USFWS/ CDFW/ CNPS list**	**Habitat Affinities and Blooming Period/Life Form**	**Potential for Occurrence**
Amorpha californica var. *napensis* Napa false indigo	-/-/1B	Broadleafed upland forest (openings), chaparral, cismontane woodland. Blooms April-July. Elevation: 120-2000m.	**None**. No habitat present in study area.
Amsinckia lunaris Bent-flowered fiddleneck	-/-/1B	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. March-June. Elevation: 3-500m	**None**. Marginal potential grassland habitat at Jennings Avenue but not observed during surveys.
Arctostaphylos canescens ssp. *sonomensis* Sonoma canescent manzanita	-/-/1B	Chaparral, lower montane coniferous forest, sometimes on serpentintie. Blooms January to June. Elevation: 180-1675m.	**None**. No habitat present in study area. No species of manzanita in study area.
Arctostaphylos stanfordiana ssp. *decumbens* Rincon Ridge manzanita	-/-/1B	Chaparral on rhyolitic soils and cismontane woodland. Blooms February to April (sometimes May). Elevation: 75-370m.	**None**. No habitat present in study area. No species of manzanita in study area.
Astragalus claranus Clara Hunt's milk-vetch	FE/CT/1B	Openings in chaparral, cismontane woodland, valley and foothill grassland on serpentinite or volcanic, rocky or clay soils. Blooms March to May. Elevation: 75-275m.	**None.** No habitat present in study area. Not observed during surveys.
Balsamorhiza macrolepis Big-scale balsamroot	-/-/1B	Chaparral, cismontane woodland, valley and foothill grassland, sometimes on serpentinite. March-June. Elevation: 90-1555m.	**None.** Typical habitat not present in study area. This species is identifiable by leaves and this species was not observed in the study area.
Blennosperma bakeri Sonoma sunshine	FE/CE/1B	Valley and foothill grassland (mesic), vernal pools. Blooms March to May. Elevation: 10-110m.	**None.** Typical habitat not present in study area.
Brodiaea leptandra Narrow-anthered brodiaea	-/-/1B	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland on volcanic soils. Blooms May to July. Elevation: 110-915m.	**None.** No habitat present in study area.

Scientific Name **Common Name**	**Status USFWS/ CDFW/ CNPS list**	**Habitat Affinities and Blooming Period/Life Form**	**Potential for Occurrence**
Calchortus uniflorus Pink star tulip	-/-/4	Coastal prairie, coastal scrub, meadows and seeps, North Coast coniferous forest. Blooms April to June. Elevation: 10-1070m.	**None.** No habitat present in study area.
Ceanothus confusus Rincon Ridge ceanothus	-/-/1B	Closed-cone coniferous forest, chaparral, cismontane woodland on volcanic or serpentinite. Blooms February to June. Elevation: 75-1065m.	**None.** No habitat present in study area. No Ceanothus shrubs in study area.
Ceanothus divergens Calistoga ceanothus	-/-/1B	Chaparral on serpentinite or volcanic, rocky soils. Blooms February to April. Elevation 170-950m.	**None.** No habitat present in study area. No Ceanothus shrubs in study area.
Ceanothus sonomensis Sonoma Ceanothus	-/-/1B	Chaparral on sandy, serpentinite or volcanic soils. Blooms February to April. Elevation: 215-800m.	**None.** No habitat present in study area. No Ceanothus shrubs in study area.
Fritillaria liliacea Fragrant fritillary	-/-/1B	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland often on serpentinite. Blooms February to April. Elevation: 3-410m.	**None.** Typical habitat not present in study area.
Hemizonia congesta ssp. *congesta* White seaside tarplant	-/-/1B	Valley and foothill grassland sometimes on roadsides. Blooms April to November. Elevation: 20-560m.	**None**. Marginal potential grassland habitat at Jennings Avenue but not observed during surveys..
Lasthenia burkei Burke's goldfields	FE/CE/1B	Meadows and seeps (mesic), vernal pools. April-June. Elevation: 15-600m.	**None.** No habitat present in study area.
Leptosiphon jepsonii Jepson's leptosiphon	-/-/1B	Chaparral, cismontane woodland, usually volcanic. Blooms March to May. Elevation: 100-500m.	**None**. No habitat present in study area.
Limnanthes vinculans Sebastopol meadowfoam	FE/CE/1B	Meadows and seeps, valley and foothill grassland, vernal pools/vernally mesic. April-May. Elevation: 15-305m.	**None.** Typical habitat not present in study area.
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	-/-/1B	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools/mesic. Blooms April to July. Elevation: 5-1740m.	**None.** Typical habitat not present in study area.
Navarretia leucocephala ssp. *plieantha* Many flowered navarretia	FE/-/1B	Volcanic ash flow vernal pools. Blooms May to June. Elevation: 30-950 m.	**None**. No habitat present in study area.

***Scientific Name* Common Name**	**Status USFWS/ CDFW/ CNPS list**	**Habitat Affinities and Blooming Period/Life Form**	**Potential for Occurrence**
Ranunculus lobbii Lobb's aquatic buttercup	-/-/4	Cismontane woodland, North Coast coniferous forest, valley and foothill grassland and vernal pools in mesic sites. Blooms February to May. Elevation: 15-470m.	**None**. Typical habitat not present in study area. No species of *Ranunculus* were observed.
Trifolium amoenum Showy Rancheria clover	FE/-/1B	Coastal bluff scrub, valley and foothill grassland, sometimes on serpentinite. Blooms April to June. Elevation: 5-415m.	**None**. No potential habitat – not observed during surveys.
Trifolium hydrophilum Saline clover	-/-/1B	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. April-June. Elevation: 0-300m.	**None.** Typical habitat not present in study area.
Triquetrella californica Coastal triquetrella	-/-/1B	Coastal bluff scrub, coastal scrub/soil. Elevation: 10-100m.	**None.** No habitat present in study area.
SPECIAL STATUS/SENSITIVE NATURAL COMMUNITIES			
Valley Needlegrass Grassland			**None**

NOTES:

U.S. FISH AND WILDLIFE SERVICE

FE = federally listed Endangered
FT = federally listed Threatened

CALIFORNIA DEPT. OF FISH AND WILDLIFE

CE = California listed Endangered
CR = California listed as Rare
CT = California listed as Threatened

CALIFORNIA NATIVE PLANT SOCIETY -

List 1B: Plants rare and endangered in California and elsewhere
List 4: Plants of limited distribution – a watch list.

Table D-2 - Potentially Occurring Special-Status Animal Species in the Project Area

Common Name *Scientific Name*	Status USFWS/ CDFW	Habitat Affinities and Reported Localities in the Project Area	Occurrence for Potential
Invertebrates			
Vernal pool andrenid bee *Andrena blennospermatis*		Oligolectic (specialist pollinator) on vernal pool Blennosperma and nests the uplands around vernal pools.	**None** – no suitable habitat.
California linderiella *Linderiella occidentalis*	-/SSC	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions.	**None** – no suitable habitat.
California freshwater shrimp *Syncaris pacifica*	FE/SE	Endemic to Napa, Sonoma and Marin Counties. Occurs in low elevation and low gradient streams with moderate to heavy riparian cover and permanent water.	**None** – no suitable habitat and no perennial water.
Fish			
Coho salmon - Central California Coast ESU *Onchorhynchus kisutch*	FE/SE	Occurs from Punta Gorda, in northern California, to the San Lorenzo River, in Santa Cruz County, and includes coho salmon populations from several tributaries of San Francisco Bay (e.g., Corte Madera and Mill Valley Creek).	**None** - No suitable habitat present on site and no perennial water.
steelhead - Central California Coast ESU *Onchorhynchus mykiss*	FT/SSC	Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water and sufficient dissolved oxygen.	**None** - No suitable habitat present on site and no perennial water.
Chinook salmon *Oncorhynchus tshawytscha*	FT	Requires gravel diameter of 2 to 3 inches, with depths generally less than 36 inches but more than 20 inches and a velocity of more than 3 ft/sec. Requires water temperatures from 42°F to 51°F.	**None** - No suitable habitat present on site and no perennial water.
Amphibians			
California tiger salamander *Ambystoma californiense*	FE (Sonoma County)/CT	Breeds in temporary or semi-permanent pools. Seeks cover in rodent burrows in grasslands and oak woodlands.	**None** – no suitable habitat.
foothill yellow-legged frog *Rana boylii*	-/ SSC	Inhabits permanent, flowing stream courses with a cobble substrate and a mixture of open canopy riparian vegetation.	**None** – no suitable habitat.
California red-legged frog *Rana draytonii*	FT/ SSC	Prefers semi-permanent and permanent stream pools, ponds and creeks with emergent and/or riparian vegetation. Occupies upland habitat especially during the wet winter months.	**None** – no suitable habitat.
Reptiles			
western pond turtle *Emys marmorata marmorata*	-/ SSC	Prefers permanent, slow-moving creeks, streams, ponds, rivers, marshes and irrigation ditches with basking sites and a vegetated shoreline. Requires upland sites for egg-laying.	**None** – no suitable habitat.

Common Name *Scientific Name*	**Status USFWS/ CDFW**	**Habitat Affinities and Reported Localities in the Project Area**	**Occurrence for Potential**
Birds			
white-tailed kite *Elanus leucurus*	MB/CFP	Inhabits low rolling foothills and valley margins with scattered oaks and river bottom- lands or marshes adjacent to deciduous woodlands. Prefers open grasslands, meadows and marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Absent** – would have been detected.
northern spotted owl *Strix occidentalis caurina*	FT, MB/-	Dense coniferous and hardwood forest, shaded, steep sided canyons.	**None** – no suitable habitat.
Mammals			
Western red bat *Lasiurus blossevillii*	-/SSC	Roosts in foliage of large shrubs and trees in woodland borders, rivers, agricultural areas, and urban areas with mature trees. Typically found in large cottonwoods, sycamores, walnuts and willows associated with riparian habitats. Solitary when roosting, except when females are with young (from 2 to 5 are born). Forages over mature orchards, oak woodland, low elevation conifer forests, riparian corridors, non-native trees in urban and rural residential areas, and around strong lighting.	**Low –** suitable roosting habitat in mature trees.
Hoary bat *Lasiurus cinereus*	-/-	Roosts singly (except female-young association) in dense foliage of medium to large coniferous and deciduous trees. Highly migratory, but occurs year-round in California, overwintering in S.F. Bay Area. Forages over tree canopy, often high altitude, often long distances from day roost.	**Low –** suitable roosting habitat in mature trees.

U.S. FISH AND WILDLIFE SERVICE

FE = federally listed Endangered
FT = federally listed Threatened
FC = federal candidate for listing
FSC = federal Species of Concern
MBTA = Migratory Bird Treaty Act.

CALIFORNIA DEPT. OF FISH AND WILDLIFE

CE = California listed Endangered
CT = California listed as Threatened
SSC = Species of Special Concern

Tree Removal Summaries and Figures

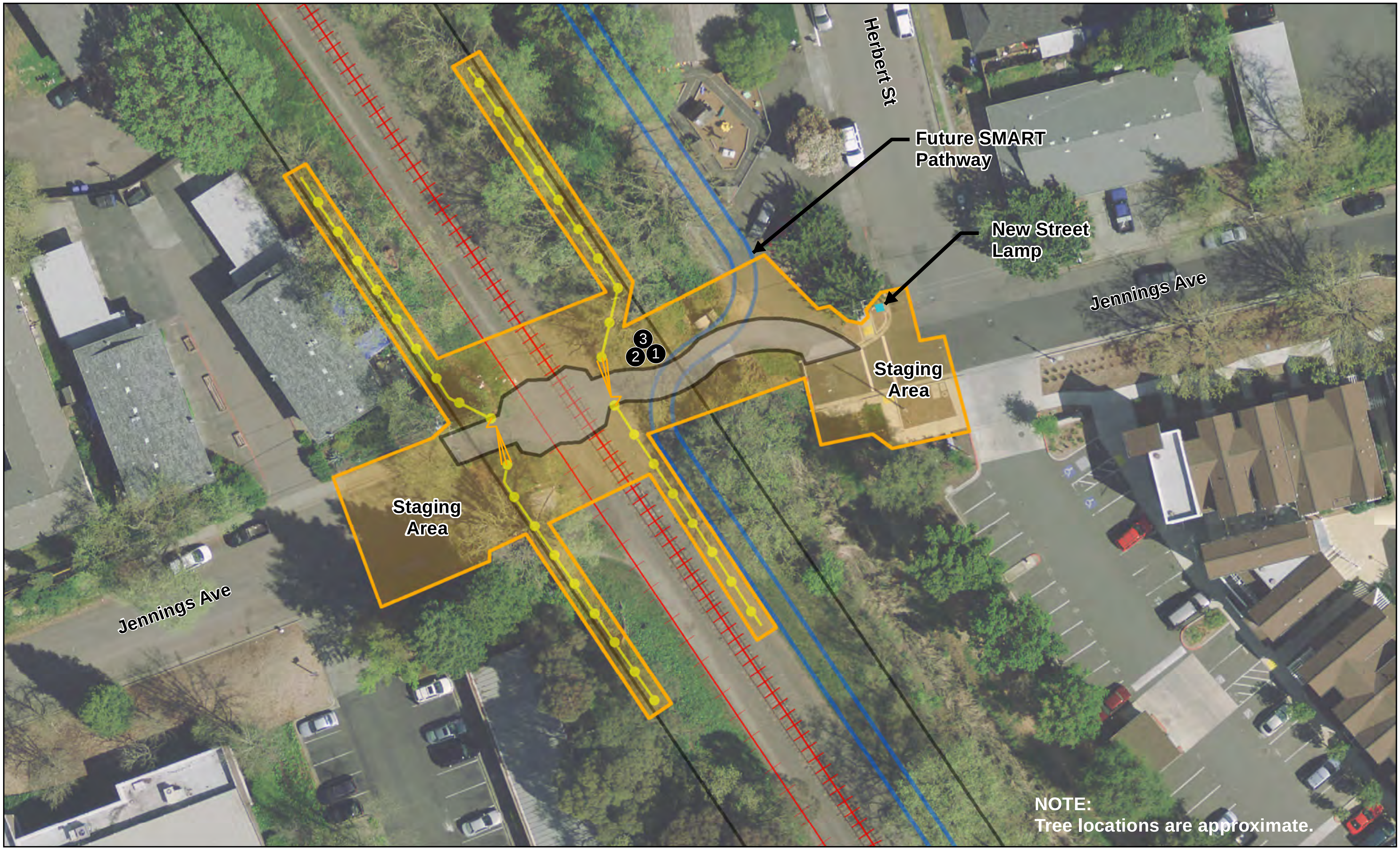
The type and size of the trees greater than 4-inches in diameter that may potentially be removed as part of the Project are summarized in the Table D-3 below. The locations of the trees are shown on Figures D-1 and D-2 below. Several additional tree saplings 3-inches or less in diameter may also be removed on the east and west sides of the rail corridor. These species are not listed in the table below, as they are not large enough to quality as heritage or protected trees in the City's Code, or as significant trees that provide riparian tree canopy associated with Steele Creek.

Table D-3 - Potential Tree Removals in the Study Area

Tree ID #	Species	Size (dbh)	Native
1	Valley Oak	12"	Yes
2	Valley Oak	12"	Yes
3	Valley Oak	15"	Yes
4	Valley Oak (*Quercus lobata*)	4"	Yes
5	Valley Oak (*Quercus lobata*)	19"	Yes
6	Valley Oak (*Quercus lobata*)	4"	Yes
7	Valley Oak (*Quercus lobata*)	6"	Yes
8	Valley Oak (*Quercus lobata*)	23"	Yes
9	Valley Oak (*Quercus lobata*)	17"	Yes
10	Valley Oak (*Quercus lobata*)	17"	Yes
11	Big Leaf Maple (*Acer macrophyllum*)	6"	No
12	Valley Oak (*Quercus lobata*)	5"	Yes
13	Valley Oak (*Quercus lobata*)	5"	Yes
14	Valley Oak (*Quercus lobata*)	4"	Yes
15	Valley Oak (*Quercus lobata*)	Trunk 1 – 5" Trunk 2 – 2"	Yes
16	Valley Oak (*Quercus lobata*)	Trunk 1 – 4" Trunk 2 – 2"	Yes
17	Valley Oak (*Quercus lobata*)	Trunk 1 – 7" Trunk 2 – 2"	Yes
18	Valley Oak (*Quercus lobata*)	4"	Yes

Tree ID #	Species	Size (dbh)	Native
19	Valley Oak (*Quercus lobata*)	6”	Yes
20	Valley Oak (*Quercus lobata*)	4”	Yes
21	Valley Oak (*Quercus lobata*)	22”	Yes
22	Valley Oak (*Quercus lobata*)	Trunk 1 – 10” Trunk 2 – 10”	Yes
23	Valley Oak (*Quercus lobata*)	Trunk 1 – 5” Trunk 2 – 3”	Yes
24	Valley Oak (*Quercus lobata*)	5”	Yes
25	Valley Oak (*Quercus lobata*)	8”	Yes
26	Valley Oak (*Quercus lobata*)	7”	Yes
27	Valley Oak (*Quercus lobata*)	20”	Yes
28	Mulberry (*Morus alba*)	4”	No
29	Sweet gum *Liquidambar styraciflua*)	9”	No
30	Coast Redwood (*Sequoia sempervirens*)	18”	Yes
31	Valley Oak (*Quercus lobata*)	Trunk 1 – 12” Trunk 2 – 12” Trunk 3 – 11”	Yes
32	Valley Oak (*Quercus lobata*)	Trunk 1 – 16” Trunk 2 – 17” Trunk 3 – 12”	Yes
33	Unknown Ornamental	Trunk 1 – 11” Trunk 2 – 12” Trunk 3 – 15” Trunk 4 – 12” Trunk 5 – 10”	No
34	English Walnut (*Juglans regia*)	19”	No
35	Sweet gum (*Liquidambar styraciflua*)	19”	No
36	Coast Redwood (*Sequoia sempervirens*)	40”	Yes

Tree ID #	Species	Size (dbh)	Native
37	Coast Redwood (*Sequoia sempervirens*)	29”	Yes
38	Coast Redwood (*Sequoia sempervirens*)	6”	Yes
39	Valley Oak (*Quercus lobata*)	Trunk 1 – 4” Trunk 2 – 2”	Yes
40	Valley Oak (*Quercus lobata*)	16”	Yes



Paper Size ANSI A

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

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LEGEND

- Fencing
- Conceptual Rail Crossing and Path
- Signal Arm
- Construction Area Boundary
- 1 Tree ID Number
- Future SMART Pathway
- SMART Rail Corridor
- Main Track
- Siding Track

GHD

City of Santa Rosa

City of Santa Rosa
Jennings Avenue Crossing EIR

Job Number	8410868
Revision	A
Date	01 Oct 2014

Preferred Project - At-grade Rail Crossing - Potential Tree Removal **Figure D-1**

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2235 Mercury Way Santa Rosa, CA 95407 T 707-523-1010 F 707-527-8679 W www.ghd.com

Data source: GHD 2013. Created by:rmremillard

Paper Size 11" x 17" (ANSI B)

0 50 100
Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

N

LEGEND

- Fencing
- Over-Crossing Boundary
- Signal Arm
- Construction Area Boundary
- New Street Lamp
- Future SMART Pathway
- SMART Rail Corridor
- Main Track
- Siding Track
- 1 Tree ID Number

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City of Santa Rosa
Jennings Avenue Crossing EIR

Job Number	8410868
Revision	
Date	01 Oct 2014

Rail Overcrossing Alternative Potential Tree Removal

Figure D-2

\\ghdnet\ghd\US\Santa Rosa\Projects\02057 - City of Santa Rosa\02057-8410868 Jennings Ave Crossing EIR\08-GIS\Over Crossing Tree Removal.mxd

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by:rmremillard

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Appendix E

Historical Resources Technical Report

JENNINGS AVE. PEDESTRIAN AND BICYCLE RAIL CROSSING PROJECT
HISTORICAL RESOURCES TECHNICAL REPORT

Santa Rosa, California

July 28, 2014

Prepared for
GHD
2235 Mercury Way, Suite 150
Santa Rosa, CA

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INTERACTIVE
RESOURCES
Architects & Engineers

Table of Contents

Introduction

Background Information

The City of Santa Rosa is proposing improvements at an existing, unofficial at-grade pedestrian and bicycle rail crossing at Jennings Avenue to provide an official rail crossing. The new crossing is proposed to be either at-grade or above-grade, i.e., an overcrossing. The City is required to obtain the permission of the California Public Utilities Commission (CPUC) in order to construct the rail crossing. CPUC staff has suggested that, if the at-grade alternative is selected then Santa Rosa should close another rail crossing within the City in order to maintain the same number of total rail crossings. The proposed single crossing closure would occur at either West Sixth, Seventh or Eighth Street, which are partially within the West End Preservation District and the potential North Railroad District and adjacent to the Railroad Square Preservation District. The overcrossing alternative would not require the closure of any at-grade crossings.

The following Historic Resource Technical Report identifies existing historical resources as defined by the California Environmental Quality Act (CEQA) within the project areas and assesses potential impacts to those resources resulting from the proposed overcrossing at Jennings Avenue, the at-grade crossing at Jennings Avenue and each of the three potential crossing closure locations. Additionally, the report summarizes the history and the significance of the project areas, identifies the regulatory framework to which the project must adhere and provides an assessment of the proposed project within the context of CEQA and relevant planning documents of the City of Santa Rosa.

Methodology

The following analysis is based on the guidelines established in several City of Santa Rosa planning documents pertaining to historic resources and districts and the CEQA Statute and Guidelines. A California Historical Resources Information System (CHRIS) Records Search was performed by Kate Erickson Green of Sonoma State University in March 2014, and archival research was conducted at the San Francisco Public Library, the Sonoma County Library and the City of Santa Rosa website. A site visit to the Jennings crossing site and to the three potential crossing closure sites was conducted on April 9, 2014. The review of the proposed project is based on a written description and location plans from November 2013 provided by GHD.

Existing Conditions

Jennings Avenue Project Area

The SMART rail corridor bisects Jennings Avenue in central Santa Rosa. Jennings Avenue runs west to east from Highway 101 to Halyard Drive, but does not cross over the railroad tracks. The area surrounding the intersection of Jennings Avenue and the railroad tracks is primarily developed with single and multi-family residential buildings. South of Jennings Avenue, Dutton Avenue, which runs parallel to the railroad line, becomes increasingly commercial, and a small office park is located at the parcels southwest of the subject intersection. Dense vegetation along the railroad corridor provides a buffer

between the tracks and adjacent buildings. Additionally, a pedestrian and bike path runs alongside the eastern side of the railroad and beside Steele Creek, behind the buildings and north of Jennings Avenue.

Just east of the project area is the intersection of Herbert Street and Jennings Avenue, two narrow residential streets. A large parking lot and modern three-story apartment complex stand on the site south of Jennings Avenue. North of Jennings Avenue, on the west side of Herbert Street, is a one-story daycare and two single-story residential buildings and on the east side are single-story duplexes. Continuing north along Herbert Street the housing becomes denser with mostly two-story multi-family buildings. A low barrier at the end of Jennings Avenue stops traffic from continuing across the railroad tracks.

West of the project area are several parcels located between the railroad tracks and the intersection of Jennings Avenue and North Dutton Avenue, a wide, four-lane thoroughfare. South of Jennings Avenue is a single-story office park of seven inter-related buildings and three parking lots. North of Jennings Avenue clusters of one-and two-story multi-family residential buildings are sited around a series cul-de-sacs. Again Jennings Avenue dead-ends into a lower barrier at the railroad tracks.

Crossing Closure Sites

The three possible crossing closure sites are generally located east of U.S. 101 and north of both Highway 12 and Santa Rosa Creek. The possible crossing closure sites would be located within the vicinity of: the local West End Preservation District; the local Railroad Square Preservation District and National Register Historic District; and the potential North Railroad District. The parcels flanking the railroad tracks between West Sixth Street and West Eighth Street feature historically industrial buildings, and several of the properties adjacent to the railroad maintain fencing along the track right-of-way or vegetation for screening. The local West End Preservation District is directly west of the possible crossing closure sites and consists primarily of small single-family residences from the late 19th and early 20th centuries. South of West Sixth Street is the Railroad Square Preservation District, which includes the historic train depot and park and a dense commercial area with two- and three-story buildings. Wilson Avenue runs parallel to the railroad tracks connecting the Railroad Square Preservation District to Ninth Street and maintains mostly one- and two-story commercial buildings on the east side and industrial buildings on the west side. East of Wilson Street to U.S. 101 is another primarily single-family home residential area.

Historic Context

Brief History of Santa Rosa

The City of Santa Rosa is centrally located within the County of Sonoma along Highway 101 approximately 55 miles north of San Francisco. The land was once part of the Rancho Cabeza de Santa Rosa which was granted to Maria Ignacia Lopez, the mother of General Vallejo’s widow, Francisca Benicia Carrillo, in 1837. Lopez and her children moved to Rancho Cebeza de Santa Rosa from San Diego and built a home on the south side of Santa Rosa Creek. She remained at the Rancho until her death. In 1853, Lopez’s son Julio Carrillo filed a claim for part of the property and built his home on a

site that is in present day downtown Santa Rosa at Second Street. Carrillo then donated the land for the original courthouse and plaza. The city was officially founded in 1854.

Most of the early American settlers during the mid-1800s established farmsteads throughout the area, and Santa Rosa thrived through the first decades of the twentieth century as the trading center of the rich agricultural lands. In 1870, the first railroad was established through the city. The railroads made Santa Rosa a shipping hub for agricultural products, the lumber industry and basalt quarries.

The 1906 earthquake greatly damaged the young city's business section, and most of the commercial district had to be rebuilt. Santa Rosa continued to grow and prosper at a steady rate up to World War II. The war brought the development of two military airfields and government housing, which brought thousands of new residents to the area. Postwar through to the 1970s, Santa Rosa continued to experience huge increases in population and residential development. The growth spread out into the outlying farmsteads, which were generally replaced by large neighborhoods of tract housing and typical suburban development.[1]

History of the Jennings Site

In the 1850s much of the lands around the Santa Rosa area also became available to American settlers. Thomas Jennings purchased what was to be known as Jennings Farm and worked locally as a grocer. In 1877, T. Jennings is listed as the owner of 230 acres of land straddling the railroad line just northwest of the Santa Rosa.[2] By 1905, Edward B. Jennings, a descendant of Thomas Jennings, had started subdividing the property and selling off lots for development. Some buyers that Jennings sold lots to included John P. Overton and James W. Hall, who subsequently sold off the property mostly to farming families.[3]

In 1938, the site located just northwest of the City of Santa Rosa city limits was still identified on the Thomas Brothers' map as the Jennings Farm.[4] Previous research indicates that from the 1920s through to the 1960s, the Jennings Avenue neighborhood consisted mostly of self-sufficient Italian farming families.[5] A 1964 aerial photograph shows the majority of the land surrounding the intersection of Jennings Avenue and the railroad remained agricultural land.[6] The only visible buildings near the project site in the 1964 photo are an apartment complex at the corner of Jennings Avenue and Range Avenue and some small residential and agricultural buildings on the south side of Jennings Avenue between the railroad and Range Avenue. (The apartment complex is still extant, while the building south of Jennings Avenue were demolished and replaced by multi-family housing in 2007.) Farther away from the subject intersection more development is visible including Coddingtown Mall to the northeast, a single-family

---

[1] Anne Bloomfield, *Cultural Heritage Survey of the City of Santa Rosa, California*, (San Francisco: 1989): 1-5; and Douglas E. Kyle, *Historic Spots in California*, Revised edition, (Stanford: Stanford University Press, 2002): 509.
[2] Thomas Thompson & Co. *Map Number Six: Russian River, Santa Rosa, and Analy Townships*, (Oakland: 1877): 42-43.
[3] Susan M. Clark and Holly L. Hoods, Historic Resource Inventory, Ettore Novelli Farmstead, (September 2003); and Noelle Storey, Historic Resource Inventory, Rossi Property, (January 2000).
[4] Thomas Brothers, *Map of Santa Rosa and Vicinity*, (Oakland: 1938).
[5] Clark and Hoods, 2003.
[6] Sonoma County Library aerial photography collection. Santa Rosa Aerial View. August 10, 1964.

home residential neighborhood east of Range Avenue and more residential developments west of Eardley Avenue and south of Jennings Avenue.

In the late 1960s and early 1970s, the parcels between Range Avenue and the railroad tracks were subdivided, and multi-family housing units were developed, ranging from duplexes to larger apartment complexes. The majority of the buildings in this area were constructed after 1966. Only one building within the project area on the west side of Herbert Street was constructed prior to 1960, according to county assessor's records. The house at 1573 Herbert Street is listed as having been constructed in 1949; however, it appears to have been greatly altered and no longer maintains any historic integrity from that period.[7]

The sites directly west of the railroad tracks and north of Jennings Avenue were also subdivided, and multi-family housing laid out around cul-de-sacs was developed beginning in the late 1960s. South of Jennings Avenue a single-story office park consisting of seven separate buildings was constructed in the early 1980s.

In 1978, the City of Santa Rosa extended Range Avenue (located on the east side of the railroad tracks) south of Jennings Avenue through the existing farm sites. The City's forced sale of the land drastically altered the setting of the Jennings Avenue neighborhood from a rural farmland to one with relatively dense single and multi-family residential developments. The parcels between Range Avenue and the railroad tracks feature apartment complexes constructed between 2005 and 2007. The only remnant of the original agricultural character of the area remains at the southeast corner of Jennings Avenue and Range Avenue, where there is still extensive undeveloped land and small agricultural buildings.

History of the North Railroad Square Area

The arrival of the railroad in 1870 served as a catalyst for significant development surrounding the depot and the railroad tracks. A commercial district was constructed within the immediate vicinity of the train depot; today the area is known as the Railroad Square Preservation District, a National Register Historic District. North of the depot, and several blocks away from either side of the tracks, single-family home residential neighborhoods filled the parcels. To the northwest of the Railroad Square Preservation District is the locally recognized West End Preservation District. Industries were established on the parcels immediately flanking the tracks north of West Sixth Street. The parcels adjacent to the tracks from West Sixth Street to West Ninth Street have been identified as the potential North Railroad District which appears eligible for inclusion in the National Register of Historic Places (NRHP).

The land immediately adjacent to the railroad tracks and along Wilson Avenue between West Sixth Street and West Ninth Street was primarily developed by industrial and commercial ventures which benefitted from the new rail line. The majority of the large industrial buildings were constructed from 1875-1907. The main industries to be established in this area included the Santa Rosa Flour Mill, De Turk's Winery, general warehouses, the American Produce Company warehouse and a lumber yard. Subsequently, small-scale commercial development along the east side of Wilson replaced what had been primarily residential

[7] Sonoma County Assessor's records for APN 012-440-040-000. Accessed online at http://www.sonoma-county.org/assessor/ParcelMaps.htm (May 2014).

between 1925 and 1947 and included: grocery stores, a saloon, a cooper shop, a winery, a blacksmith shop and residential hotels.[8] Today, the area remains both industrial and commercial, and maintains many of its early structures.

Regulatory Environment/Evaluation Criteria

The California Environmental Quality Act (CEQA) requires that cultural resources be considered as part of the environmental review process. The consideration is undertaken by first establishing an inventory of resources within the project study area and then by assessing the potential impact the proposed project could have on any identified resources.

According to CEQA Section 21084.1, historical resources include any resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR), established in 1992. According to PRC §5024.1, a resource may be listed in the CRHR if it:

- Meets National Register of Historic Places criteria A through D (listed below);
- Has been determined eligible for, or listed in, the National Register of Historic Places;
- Is a State Historical Landmark designated after No. 770 and potentially if it was designated before No. 770;
- Is a State Point of Historical Interest; or
- Has been determined significant by the State Historical Resources Commission, including individual resources, contributors to historic districts, significant resources, districts, or landmarks; or has been designated under any municipal or county ordinance.

Generally, a resource shall be considered by the lead agency to be “historically significant” if the resource is eligible for listing on the National Register of Historic Places (NRHP), meets the criteria for listing on the CRHR (Pub. Res. Code §5024.1, Title 14 CCR, Section 4852) or is eligible for designation as a local landmark.

National Register of Historic Places

National Register Bulletin Number 15, *How to Apply the National Register Criteria for Evaluation*, describes the Criteria for Evaluation as being composed of two factors. First, the property must be “associated with an important historic context.” The NRHP identifies four possible context types, of which at least one must be applicable at the national, state, or local level. As listed under Section 8, “Statement of Significance,” of the NRHP Registration Form, these are:

> “A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
>
> “B. Property is associated with the lives of persons significant in our past.

[8] Anne Bloomfield, Historic Resource Inventory, North Railroad District, July 1989.

“C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

“D. Property has yielded, or is likely to yield, information important to prehistory or history.”

Second, for a property to qualify under the NRHP’s Criteria for Evaluation, it must also retain “historic integrity of those features necessary to convey its significance.” While a property’s significance relates to its role within a specific historic context, its integrity refers to “a property’s physical features and how they relate to its significance.” To determine if a property retains the physical characteristics corresponding to its historic context, the NRHP has identified seven aspects of integrity. These are:

“Location is the place where the historic property was constructed or the place where the historic event occurred...

“Design is the combination of elements that create the form, plan, space, structure, and style of a property...

“Setting is the physical environment of a historic property...

“Materials is the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property...

“Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory...

“Feeling is a property’s expression of the aesthetic or historic sense of a particular period of time...

“Association is the direct link between an important historic event or person and a historic property.”

Since integrity is based on a property’s significance within a specific historic context, an evaluation of a property’s integrity can only occur after historic significance has been established.

California Register of Historical Resources

California Office of Historic Preservation’s Technical Assistance Series #6, *California Register and National Register: a Comparison*, outlines the differences between the federal and state processes. The context types to be used when establishing the significance of a property for listing on the CRHR are very similar, with emphasis on local and state significance. They are:

“1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or

“2. It is associated with the lives of persons important to local, California, or national history; or

> "3. It embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of a master, or possesses high artistic values; or
>
> "4. It has yielded, or is likely to yield, information important to prehistory or history of the local area, California, or the nation."

Integrity must also be determined for a property to be listed on the state register. The CRHR maintains a similar definition of integrity, while provided for a slightly lower threshold than the NRHP.

In addition to separate evaluations for eligibility to the CRHR, the state will automatically list resources if they are listed or determined eligible for the NRHP through a complete evaluation process.

City of Santa Rosa Designation

The Santa Rosa City Council adopted a Preservation Ordinance in 1988 and created the City's Cultural Heritage Board. The Board recommends to the City Council designation of landmarks and preservation districts, review permits for alterations to landmarks and buildings within preservation districts, and promotes public awareness of historic resources. Article III of Chapter 17-22 of the City Code allows for the City Council to designate landmarks and defines a landmark as "any site… place, building, structure, street, street furniture, sign, work of art, natural feature or other object having a specific historical, archaeological, cultural or architectural value in the City and which has been designated a landmark by the City Council," and preservation districts as "any clearly described geographic area having historical significance or representing one or more architectural periods or styles typical to the historic of the City which has been designated a preservation district by the City Council."[9] The City of Santa Rosa currently has twenty-one landmarks and eight designated historic preservation districts.[10]

Generally, historical resources in Santa Rosa include the following properties:

- Properties or Districts listed in the National Register of Historic Places.
- Properties that have been designated local Landmarks by the City of Santa Rosa.
- Properties within a local designated Preservation District that contribute to the significance of the District.
- Properties listed as having historical significance in the City's local register (the Santa Rosa Cultural Heritage Survey) even though the properties have not been officially designated as Landmarks or Preservation Districts by the City.

[9] City of Santa Rosa City Code Chapters 17-22 and 20-58.
[10] City of Santa Rosa, *Santa Rosa General Plan 2035*, (Santa Rosa, November 3, 2009) 11-2.

- Other properties presumed to be historically or culturally significant under the provisions of CEQA by the City of Santa Rosa.[11]

Similar to the federal and state criteria, the following specific criteria are used by the City of Santa Rosa in order to determine historical significance:

Event. Is the property associated with an event that has made a significant contribution to Santa Rosa's history; or

Person. Is the property associated with the life of a person who was significant in Santa Rosa's history; or

Design. Does the property embody the distinctive characteristics of a type, period, or method of construction found in Santa Rosa before 1950; or

Information. Has the property yielded, or may be likely to yield, information important in Santa Rosa's prehistory or history; and

Integrity. Does the property retain enough aspects of location, design, setting, workmanship, materials, feeling, and association to convey its historic significance?[12]

Project Impact Assessment

State of California

Once all historical resources have been identified, then the project must be assessed for potential impacts. Under CEQA, a project is considered to have a significant impact on a cultural resource if it will "cause a substantial adverse change in the significance of a historical resource as defined in [CCR Title 14 Chapter 3] §15064.5."[13] The CEQA Guidelines state that physical demolition of a resource by definition constitutes a "substantial adverse change" and would therefore have a significant adverse effect on the resource. Furthermore, relocation or "alteration of the resource or its immediate surroundings" can also constitute a substantial adverse change in the significance of an historical resource if it would result in "material impairment" of the resource. A project is considered to result in material impairment when it "alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion" in the CRHR.[14]

Local

The City of Santa Rosa's process for determining a project's impact is clearly described in the Cultural Heritage Board's publication *Processing Review Procedures for Owners of Historic Properties.* This

[11] City of Santa Rosa, Cultural Heritage Board, Processing Review Procedures for Owners of Historic Properties, (Adopted January 2001): 18-19.
[12] Ibid.
[13] California Public Resources Code § 5020.1 (q).
[14] Association of Environmental Professional. CEQA Stature and Guidelines, § 15064.5(b)(2)(A), 2014.

document outlines both the environmental review and design review process for project involving historical resources. In reviewing projects that involve exterior alterations to designated landmarks or structures within a preservation district, the Board considers both the Design Guidelines for Historic Properties and the Secretary of the Interior's Standards for Rehabilitation. The document outlines the type of projects that are exempt from review, may be reviewed by staff or must go before the Board. Typical projects reviewed by the Board involve additions to or renovations of historic buildings.[15]

Proposed Project

The proposed project includes improvements to an existing, unofficial at-grade pedestrian and bicycle rail crossing at Jennings Avenue to provide an official rail crossing. The new crossing is proposed to be either at-grade or above-grade. At the recommendation of the CPUC, an existing rail crossing within the City should be closed if the at-grade alternative at Jennings Avenue is selected in order to maintain the same number of total rail crossings. The proposed single closure would occur at either West Sixth, Seventh or Eighth Street. The overcrossing alternative would not require the closure of any existing at-grade crossings.

Identification of Historical Resources

Jennings Avenue Project Site

The CHRIS records search indicated that there are no known historic resources listed in the national, state or local inventories of historical resources within the Jennings Avenue project area. Three agricultural sites were previously evaluated and none were found to be eligible for inclusions in the national or state registers. Additionally, the previously evaluated resources have since been demolished, and all three sites have been developed with modern multi-family housing.

A windshield survey was conducted, and background archival research was undertaken on the subject project area. The survey did not identify any potential historic resources within the project area. Several properties were noted to be over-fifty years old including: single-family homes on the east side of Range Avenue and one apartment complex at the west side of Range Avenue near Jennings Avenue; however, these properties are over two hundred feet from the project site in both proposed alternatives and would not be impacted by the proposed crossing. Therefore, an evaluation of those properties was not undertaken.

Archival research indicated that one nearby property (just over two hundred feet from the project boundary) was likely constructed over fifty years ago. Assessor's record lists 1573 Herbert Street as having been constructed in 1949; however, the one-story house appears to have undergone significant alterations and no longer maintains any historic character defining features. Additionally, the property's

[15] City of Santa Rosa, Cultural Heritage Board, Processing Review Procedures for Owners of Historic Properties, (Adopted January 2001): 18-19.

setting has been substantially changed since 1949, degrading any historic integrity. No further evaluation was conducted on this property, which also is outside the area of potential effect for the project.

Based on the CHRIS record search, a review of City of Santa Rosa planning documents, a windshield survey, and archival research, it does not appear that any historical resources are located within two hundred feet of the project construction boundary in either proposed alternative for the Jennings Avenue Pedestrian and Bicycle Rail and Crossing.

Proposed At-grade Crossing Closure Sites

There are three possible sites for the railroad crossing closure: West Sixth Street between Wilson Street and Adams Street; West Seventh Street between Wilson Street and Adams Street; and West Eighth Street between Wilson Street and Donahue Street. West of the railroad tracks at the three crossings is the locally recognized West End Preservation District. South of West Sixth Street is the locally recognized Railroad Square Preservation District and National Register Historic District. Finally, the crossing sites are located within the potential North Railroad District which appears eligible for the NRHP. The area analyzed in this report extends roughly 100 feet north of West Eighth Street, east of Wilson Street, south of West Sixth Street, and west of Adams Street.

West End Preservation District

The West End Preservation District was designated in 1996 and is bounded by West Ninth Street on the north, Santa Rosa Creek and West Sixth Street on the south, the Northwestern Pacific (NWP) Railroad tracks on the east and North Dutton Avenue on the west. The period of significance for the district is from the 1870s to the 1940s, and the following context statement identifies the historical significance of the district:

> The West End Preservation District is significant for architecture as a large and reasonably intact 19th and early 20th century working-class residential district of small houses on the "wrong side of the tracks" and for its ethnic history as Santa Rosa's large and long-standing Italian neighborhood. The large 'Italian Town' in and around the West End district is Santa Rosa's only historic ethnic neighborhood. Besides representing a good cross section of very modest residential architecture of the 1870s through the 1940s, the West End shows traces of its heritage in its rustic landscaping, stonework and folk art, and the generally handmade character of the home improvements.
>
> The residential development of the District can be seen in the architectural progression of West Sixth, Seventh, and Eighth Streets. Early construction can be found on West Sixth Street, examples of the late 1890s on West Seventh Street, and earth 20th century styles are visible on West Eighth Street. These streets combined with others in the District are an important part of the historic building fabric. De Turk's winery and the Burris Distillery buildings are important early commercial buildings. Of particular importance is the round barn used by De Turk, which is unusual in its design and one of few in the country.

The City has identified the following character defining elements of the West End Preservation District:

> The West End Preservation District is significant as a predominantly single-family residential neighborhood made up of modest (typically 700 to 1,200 square-foot) single story vernacular houses on narrow but deep lots (typically 40′ x 120′). Although a variety of architectural styles are found within the neighborhood, homes are predominately bungalows and Queen Anne or Colonial cottages. The predominant exterior building material is horizontal wood siding. Vertical window orientation is prevalent in the District.
>
> Contributing houses in the district almost exclusively orient to the street with a usable entry porch or stoop. On-site covered parking is generally in small single car detached garages set behind the main house, often close to or on the side property line, with narrow driveway access.
>
> Although not uniform, front setbacks are generally similar, with some articulation on any given block face. Small setbacks are found throughout the district. Front yards are typically informally landscaped and front yard fencing is generally three-foot tall wood picket fences if any at all. The West End has maintained the traditional two-foot sidewalk squares within the public right-of-way.
>
> Although predominately single-family residential, some multi-family (duplexes or small apartments) are found within the West End neighborhood. Additionally, there are commercial buildings (Franco American Bakery, Starks Steakhouse, Western Farms Center) and community facilities (CHOPS, De Turk Round Barn, DeMeo Park) found within the West End Preservation District that contribute to the character of the neighborhood and are well used and loved by residents.[16]

The West End Preservation District maintains significant historical connections to the NWP railroad tracks, the Railroad Square Preservation District and potential North Railroad District. The West End Preservation District was identified in the Railroad Square National Register Nomination as the "West Side Neighborhood," and it was noted as providing housing to the mostly Italian-American residents who built many of the significant buildings within the Railroad Square Preservation District and who initially stayed in the Railroad Square Preservation District hotels before finding housing in the West End Preservation District.[17] Many of the Italian-American immigrants had expertise as stone masons, and in the late 1880s when the Southern Pacific established a rail line from Santa Rosa to numerous quarries, the West End Preservation District provided the opportunity to live near the railroad tracks and find easy transportation to work in area quarries.[18]

Anne Bloomfield also noted the connection between the West End Preservation District, the Railroad Square Preservation District, and the potential North Railroad District, all of which were inherently tied to the opportunities provided by the railroad tracks. In the Westside (West End) District Historic Resource Inventory, North Railroad Square (the potential North Railroad District) is specifically identified as a

[16] City of Santa Rosa City Code Chapter 20-28.040.
[17] Dan Peterson, Railroad Square District National Register of Historic Places Nomination Form, (Santa Rosa, 1979): Statement of Significance, item number 8.
[18] Bloomfield, *Cultural Heritage Survey*, 47-48.

related feature to the West End Preservation District and the connections are further discussed in the following excerpt:

> Many [West End] residents worked in industries located near the district in the Railroad Square area – De Turk's winery, Grace Bros. brewery, California Packing Corporation (California Fruit Canners Associations), Poultry Producers of Central California, Max Reutershans's tannery on the creek, Santa Rosa Bottling Works, and Santa Rosa Woolen Mills (until it burned in 1909). The occupation most commonly given for Westside [West End] residents in directories was "laborer," unspecified – many probably in these industries…Proprietors and employees of the neighborhood [West End, North Railroad, and Railroad Square] groceries, bakeries, saloons, and hotels lived in the [West End] district. The hotels—those in Railroad Square and [in the West End] were temporary homes to recent immigrants in the early years, before they established themselves in homes in the [West End] district.[19]

Bloomfield notes, "most of the businesses of Santa Rosa's nineteenth and early twentieth-century Italian residents were located either within the Westside [West End] neighborhood and adjoining it around the railroad, or downtown around Fourth Street…other Italian-owned businesses [were] along Wilson in the North Railroad commercial district." Additionally, Bloomfield makes a direct tie to the Italian-American West End neighborhood and the significance of the railroad by stating, Santa Rosa's working Italian population in the West End was "the oldest, largest, and most closely tied to jobs in the businesses and industries along the railroad."[20]

The West End Preservation District is physically divided just south of West Eighth Street into northern and southern sections that are approximately equal in size. Madison Street provides the only north-south link between the district subareas. A review of historic Sanborn maps indicates that the Madison Street connection was made between 1904 and 1908.[21] The Westside (West End) Historic Resources Inventory (Bloomfield, 1989) provides a clear description of the West End Preservation District layout:

> The Westside [West End] District contains all or parts of about 15 city blocks just west of the NWPRR tracks in central Santa Rosa. The blocks are irregular in shape, representing two different street grids at about 30 degrees to each other, and some streets are dead ends…The district is bounded by Santa Rosa Creek on the southwest, the railroad and associated commercial and industrial buildings on the east and south, North Dutton Avenue and newer tracts to the west, and the city corporation Yard and newer houses to the north.

Later is the same document the history of the district layout is further discussed:

> Westside's [West End's] two skewed street grids are the products of two different 1876 additions – Hewett's, contain direct extensions of 6th and 7th Streets following the plat of the Original

[19] Anne Bloomfield and Betty Marvin, Historic Resources Inventory: Westside District, (July 1989).
[20] Bloomfield, *Cultural Heritage Survey*, 51-53.
[21] Sanborn Map Company, Santa Rosa, 1904 and 1908.

> Town, and Boyce's, more related to the line of Green Valley Road (now 9th Street) leading out of town to the west.[22]

Both the northern and southern subsections of the West End Preservation District maintain similar resource types, with primarily small single family residential buildings throughout and industrial buildings located closer to the railroad tracks.

Railroad Square Preservation District

The Railroad Square Preservation District was listed on the NRHP in 1979, as the Railroad Square District, and was designated a local preservation district in 1990. The local preservation district is more expansive than the National Register District and is bounded by West Sixth Street on the north, Third Street on the south, U.S. 101 Freeway on the east and Santa Rosa Creek on the west. The period of significance for the district is from 1888 to 1923, and the following context statement identifies the historical significance of the district:

> The Railroad Square Preservation District is a homogeneous mixture of building styles and construction techniques, not found elsewhere in the city, that reflect its commercial development during the railroad era, and the final onslaught of post-World War II freeway systems which effectively divided the district from the central downtown area and allowed it to retain its links with transportation systems of the past. The district maintains most of its original composition and the commercial storefronts, hotels, and remaining warehouses represent a fairly accurate snapshot of Railroad Square during the height of rail travel and commerce and its rebirth after the 1906 earthquake.
>
> Fourth Street, the main thoroughfare through the District, begins as a tree shaded park located next to a 1904 Railroad Depot (Fourth Street and Wilson Street) constructed from locally quarried basalt. The Depot is one of four such blue basalt buildings located within the District, all of which are of significant historic and architectural value (Western Hotel at 10 Fourth Street, LaRose Hotel at 100 Fifth Street, and REA Express Building at 9-11 Fifth Street). Along Fourth Street is a series of one story brick commercial buildings built from 1915 to 1925. Adjacent to the railroad tracks, which form a ribbon through the western end of the District, is a series of brick warehouses built from 1888 to 1914. The commercial brick buildings located in the District are of particular importance because the 1906 and 1969 earthquakes, as well as urban renewal, destroyed most of those found within Santa Rosa City limits.

The City has identified the following character defining elements of the Railroad Square Preservation District:

> Railroad Square is comprised of five distinct architectural areas which reflect the evolution of this historic commercial district: west of the tracks with brick warehouses and wooden loading docks (1888 to 1915); Third Street between Wilson and Davis Streets with newer buildings; South side of Fourth Street with predominately painted brick storefronts built after the 1906 earthquake; and

[22] Anne Bloomfield and Betty Marvin, Historic Resources Inventory: Westside District, (July 1989).

> the north side of Fourth Street with Mission Revival Style false front buildings built between 1911 and 1913. The signature blue basalt buildings built between 1903 and 1915 and surrounding Depot Park are the architecturally significant buildings that qualified the District for its National Register designation.
>
> Existing buildings in the Railroad Square Preservation District are typically single story, with heights ranging from 22 to 27 feet. The dominant building materials are brick, painted and unpainted, stone masonry (basalt), and stucco. The color palette of the district is generally muted. Glazed decorative tile detailing and wood paneling below windows is typical. Glass transoms and large storefront windows are typical of storefronts. Historic window types are generally wood, painted metal, or copper.
>
> Building placement in the Railroad Square Preservation District is at zero setbacks and generally covers 100 percent of the lot area. Storefronts are typically divided into 20-foot wide increments with a uniform pattern. Large building facades are divided into multiple storefront bays. Large storefront windows are 10 feet with transoms above and a wood panel or glazed tile kickplate beneath. Single light wood framed entry doors are recessed.
>
> Roof parapets are found on most commercial storefronts, obstructing flat or low pitched roofs and screening roof equipment from street level view. Although the heights of the parapets vary, they are usually harmonious with adjacent buildings. Windows on the upper façades are regularly spaced.
>
> Buildings reflect a commercial theme with simple detailing and human scale. In addition to the commercial brick buildings on the south side of Fourth Street and the four basalt buildings in the district, common architectural themes are rooted in the Mission Revival and Spanish Revival architectural styles.[23]

Similar to the West End Preservation District described above, much of the documentation of the Railroad Square Preservation District notes the significant connections between the Railroad Square Preservation District, the NWP railroad, the West End Preservation District and potential North Railroad District. The primarily commercial Railroad Square Preservation District developed around the establishment of the NWP railroad and the train depot. Industries were then established within close proximity to the railroad in order to take advantage of shipping goods and products along the railroad. At the same time, residential neighborhoods were established to provide housing for the laborers and business owners who worked within Railroad Square Preservation District or the potential North Railroad District areas.

A strong connection is made to the railroad and the West End Preservation District in the Railroad Square NRHP nomination which states:

> Not only does the Square reflect this heritage with the era of the railroad transportation but it further, and very importantly, pays tribute to the Italian-American heritage in the area. Within the area are four structures constructed from locally quarried stone by immigrant stone masons who

[23] Ibid.

> left Italy at the beginning of this century bringing their tools and skills to leave their mark on Santa Rosa and Sonoma County. Many of the these [Italian-American] immigrants stayed in the [Railroad Square] District hotels before finding housing in the nearby West Side [West End] neighborhood, main inhabited by Italian-Americans.[24] [The buildings constructed by Italian-American master builders living in Santa Rosa's Italian neighborhoods were the NWP Depot, the freight depot, the Western Hotel and the La Rose Hotel.]

Anne Bloomfield assessed the connections between the railroad and the establishment of early industry within Santa Rosa. In the *Cultural Heritage Survey of the City of Santa Rosa*, Bloomfield states that the City's two railroads (the Southern Pacific, which closed down, and the NWP) "became the focus on an industrial area…The NWP line generated many more surviving industrial buildings, most notably: …some building in the Railroad Square Preservation District, Isaac De Turk's brick winery between [West] Eighth and [West] Ninth Streets, the brick Santa Rosa Flour Mill between [West] Sixth and [West] Seventh Streets, and two warehouses between [West] Eighth and [West] Seventh: Lee Brothers' in stone, and Merritt Fruit Company of corrugated metal."[25]

Finally, as stated above, the Italian-American residents of the West End neighborhood worked, shopped and socialized within the potential North Railroad District and the Railroad Square Preservation District. Jobs were provided at the industries adjacent to the railroad and commercial enterprises such as groceries, restaurants, hotels and saloons were found along the east side of Wilson Avenue and near the depot.

North Railroad District

In 1989, Anne Bloomfield first identified the potential North Railroad District and defined the area as "a strip of commercial and industrial buildings along both sides of Wilson Street and the NWP Railroad tracks just north the Railroad Square Preservation District."[26] Bloomfield further assessed that the district could become eligible for the NRHP in 1997, when all contributors became 50 years old. The extent of the Bloomfield-defined potential district has never been fully reevaluated since 1989; however, a redefined potential North Railroad District and numerous individual properties have been reevaluated more recently.

The industrial component of the potential North Railroad District was reevaluated as part of the Santa Rosa Phase 1 SMART Corridor Project in 2006. The more narrowly defined study evaluated seven properties and determined that five of the resources appeared eligible for inclusion on the NRHP as individual properties and that the potential North Railroad District (as defined by the boundaries established in 2006) appeared eligible for the NRHP with six contributing resources, including a segment of the NWP Railroad. The study made the following conclusions regarding the potential eligibility of the district:

> The North Railroad District appears eligible for inclusion on the National Register under criteria A and C, within the context of Industrial Development, 1870 to 1945.

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[24] Peterson, Railroad Square District National Register Nomination, item number 8.
[25] Bloomfield, *Cultural Heritage Survey*, 22-23.
[26] Anne Bloomfield, Historic Resource Inventory, North Railroad District, (July 1989).

> The North Railroad District meets Criterion A because the properties found within its boundaries were important to the economic growth and development of Santa Rosa. Moreover, the industrial buildings that line the NWP Railroad are some of the earliest industrial buildings in Santa Rosa. The district meets Criterion C because it is a collection of buildings that demonstrate a variety of industrial construction styles and techniques.[27]

The previous studies on the potential North Railroad District clearly establish that there is a significant historical connection between the North Railroad District, the NWP railroad, the Railroad Square Preservation District and the West End Preservation District. Throughout numerous documents connections are made between the coming of the railroad and the establishment of industries along the tracks; the Italian-American community that lived in the West End and worked in industries within the potential North Railroad District; and that industry workers patronized commercial enterprises located along Wilson Avenue and within the Railroad Square Preservation District.

In the historic context established for the 2006 study, it is noted that railroad had a "tremendous effect on the area's economy, opening new markets for natural and agricultural resources produced locally and for manufactured goods as the area developed." One significant change the railroad had on Santa Rosa was to shift "commerce away from its previous focus around Courthouse Square, and toward the new railroad." Additionally, "the railroad also gave Santa Rosa a focal point for developing industries, and many factories and warehouses were constructed along its route."

The study continues with a detailed description of the development of the area:

> The center of railroad activity was south of the project location [south of West Sixth Street], revolving around the depot at the foot of 4th Street. The area north of 5th Street became industrial, and among the first enterprises in this area were the Empire Mills (Santa Rosa Roller Flour Mill), the Santa Rosa Winery (later the De Turk Winery), and Mark Body's blacksmith shop. By 1886, the railroad tracks north of 5th Street were lined with lumberyards, grain warehouses and a flour mill, De Turk's winery, a macaroni factory, the Hotel D'Italia Unita, and the backlots of a few dwellings (Sanborn 1885). This decidedly industrial area stayed much the same into the 20th century, although the nature of the businesses changed from time to time.[28]

In Anne Bloomfield's 1989 analysis of the potential North Railroad District, she points out in the significance section several connections between the potential North Railroad District and the adjacent districts. The report states "although the industries were owned by anglos (Isaac De Turk, George Lee, J. Mather), Italians owned the attendant small-scale commercial businesses to such an extent that North Railroad could be considered the commercial arm of the Italian Westside [West End] neighborhood." And that the "1883 commercial uses found in the district certainly symbolize filling the needs of Italian immigrant laborers at the mills and the winery." She concluded that the main residential area served by this commercial strip [Wilson Ave.] are the surrounding neighborhoods of the Westside [West End]

[27] V. Beard, Historic Resource Evaluation Report: Santa Rosa Phase 1 SMART Corridor Project, On file at the NWIC, (September 6, 2006): 19.
[28] Ibid, 4-5.

District and the Ripley Local District."[29] The following properties were identified as contributors to the potential North Railroad District (2006):

Description	**Address**
De Turk Winery Complex	802-812 Donahue St.
Laws & Yaeger Lumber	701 Wilson St.
American Produce Company	21 West Seventh St.
Lee Brothers & Company	90 West Eighth St.
Santa Rosa Flour Mill	99 West Sixth St.
NWP Railroad Segment	N/A

The 2006 study also found that all the potential contributors appeared individually eligible for the NRHP except for the NWP Railroad segment between West Sixth Street and College Avenue due to issues of integrity. The physical changes that were noted included the reduction of track lines and the changes to the settings in which the track side has been sealed and extensive freight decks have been removed.[30]

The potential North Railroad District (2006) has not been officially listed as a national, state or local historic district. However, the industrial component of the potential North Railroad District (as defined in 2006) with six potential contributing resources was evaluated and found to be potentially eligible for the NRHP. In 2009 the City of Santa Rosa issued an Initial Study/Mitigated Negative Declaration for the West End Village Project which addressed the potential district. The report states:

> [the] North Railroad District [1989] is still considered to appear eligible for listing on the National Register or California Register; although a new District-wide evaluation would be necessary. However, for the purposes of CEQA the property at 701 Wilson Street [the subject property] is within the boundaries for the potential North Railroad District as proposed in Bloomfield's 1989 survey and therefore the impact of the new construction proposed on the property must be considered for its impact on the District to ensure that there is a less-than-significant impact.[31]

CEQA does not preclude a lead agency from determining a resource to be historically significant because it is not listed in the CRHR or included in a local register of historical resources. For the purposes of the subject evaluation, because the potential North Railroad District (2006) was found to meet the applicable

[29] Bloomfield, Historic Resource Inventory, North Railroad District, (July 1989).
[30] V. Beard, Historic Resource Inventory, NWP Railroad, (April 2006).
[31] City of Santa Rosa, West End Village Project Initial Study/Mitigated Negative Declaration, (April 2, 2009): 76.

historical significance criteria and appeared eligible for listing in the NRHP, the potential district and its six contributors are considered historical resources for the purposes of CEQA evaluation. The entire potential North Railroad District (1989) requires a complete reevaluation in order to make an updated determination. A full survey and assessment of the potential North Railroad District (1989) is outside the scope of this project; however consideration has still been given to the 1989 findings.

Summary of Historical Resources within the Vicinity of the At-grade Crossing Closure Sites

Therefore, for the purposes of CEQA, there exist one National Register historic district, one locally designated historic district, one potential historic district, five identified historic buildings, and one identified historic railroad segment within the immediate vicinity of the three crossing closure sites. (For a full listing of all historical resources within a quarter-mile of the proposed crossing closure sites see: "An Archaeological Study of the Jennings Avenue Bicycle and Pedestrian Crossing," Anthropological Studies Center, May 2014.)

The West Sixth Street closure site is located at the southern boundary of the potential North Railroad District (2006), the eastern boundary of the West End Preservation District and the northern boundary of the Railroad Square Preservation District. The NWP railroad itself is considered an individual resource within the project site because it has been identified as a contributing element of the potential North Railroad District (2006). The Santa Rosa Flour Mill (99 West Sixth Street) occupies the parcel northeast of the intersection. No buildings stand on the parcels to the south: to the southeast is surface parking and to the southwest is an industrial yard enclosed by chain link fencing. The building at 5 West Sixth Street does not appear to be a historic resource either as part of a district or individually. Therefore, while the site would be adjacent to three historic districts, only two contributing individual resources are present at the West Sixth Street intersection.

Note: The building located at 5 West Sixth Street, adjacent to the West Sixth Street crossing site, is not listed as a contributor to either the West End Preservation District or the potential North Railroad District (2006). While the building generally maintains the same footprint as the building shown on historic Sanborn maps, it appears to have been extensively renovated and no longer exhibits any potential character defining features. Additionally, the building is identified as being two-story in the 1950 Sanborn map, whereas the current building is only one-story. 5 West Sixth Street does not appear eligible for the CRHP or the local register.

The West Seventh Street closure site is located at the eastern boundary of the West End Preservation District and within the potential North Railroad District (2006). Individual resources previously identified at the intersection include the NWP railroad, American Produce Company (21 West Seventh Street), the Santa Rosa Flour Mill (99 West Sixth Street) and the Lee Brothers & Co. warehouse (90 West Eighth Street). A surface parking area occupies the south end of the Lee Brothers & Co. parcel.

The West Eighth Street closure is located at the eastern boundary of the West End Preservation District and within the potential North Railroad District (2006). Individual resources previously identified at the intersection include the NWP railroad, American Produce Company (21 West Seventh Street), part of the De Turk Winery Complex (806 Donahue Street), Laws & Yaeger Lumber building (701 Wilson Street)

and the Lee Brothers & Co. warehouse (90 West Eighth Street). Further, the West Eighth Street site is the only crossing which provides access from Wilson Street to the northern section of the West End Preservation District, which is largely disconnected from the District's southern portion.

Address	Name	Historic Status
	West End Preservation District	Locally designated district
	Railroad Square Preservation District	Locally designated district encompassing a National Register Historic District
	Potential North Railroad District (2006, Industrial Component)	Identified as potentially eligible for the NRHP
701 Wilson St.	Laws & Yaeger Lumber	3CS – Eligible for the CRHR[32]
21 West Seventh St.	American Produce Company	Appears eligible for the NRHP[33]
90 West Eighth St.	Lee Brothers & Co.	Appears eligible for the NRHP & as a contributor to the potential North Railroad District (2006) [34]
99 West Sixth St.	Santa Rosa Flour Mill	Appears eligible for the NRHP & as a contributor to the potential North Railroad District (2006) [35]
West Sixth to Ninth Streets	Northwestern Pacific Railroad	Appears eligible as a contributor to the potential North Railroad District (2006)
802-812 Donahue St.	De Turk Winery Complex	Determined eligible for the NRHP & as a contributor to the potential North Railroad District (2006) [36]

[32] Diane Painter, Historic Resource Inventory, 701 Wilson, (December 2007).
[33] V. Beard, Historic Resource Inventory, American Produce Co., (July 2006).
[34] V. Beard, Historic Resource Inventory, Lee Bros & Co Warehouse, July 2006.
[35] V. Beard, Historic Resource Inventory, Santa Rosa Flour Mill, August 2006.
[36] V. Beard, Historic Resource Inventory, De Turk Winery Complex, August 2006; according to the 2006 Inventory, the De Turk Winery Complex was determined eligible for the NRHP in 1994.

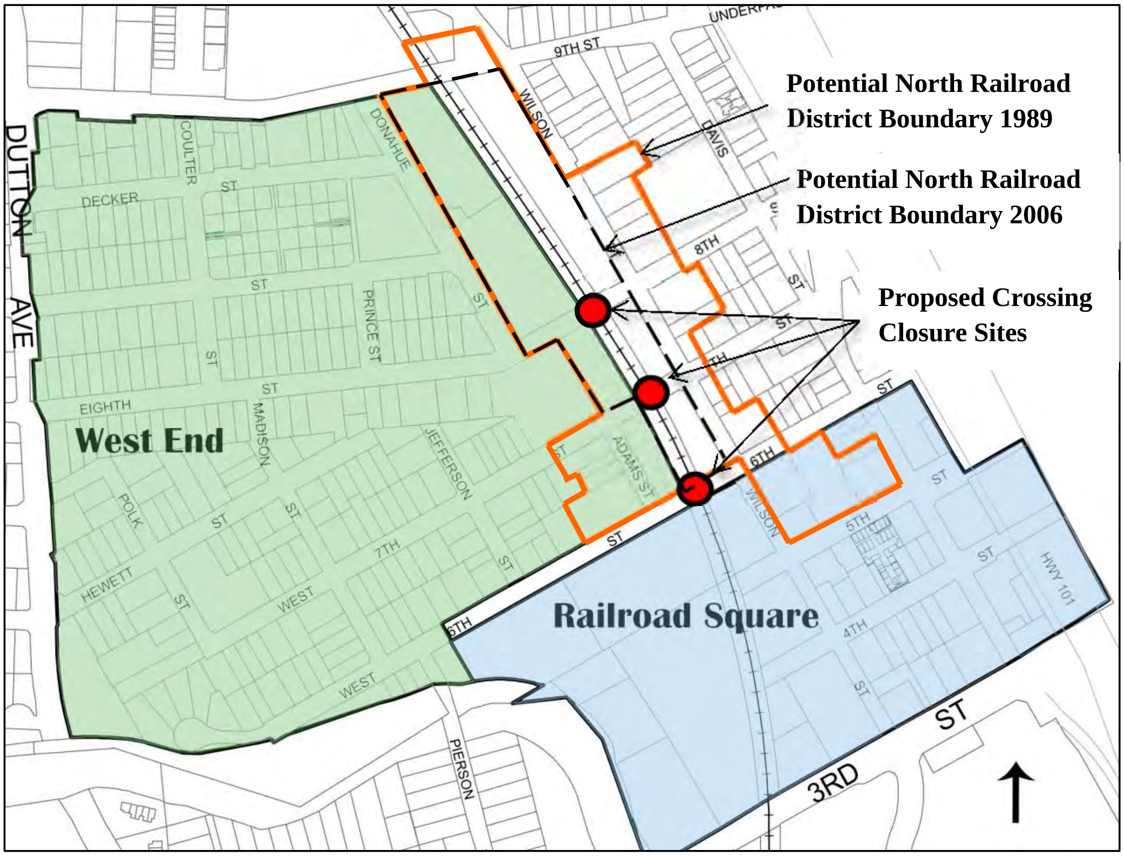


Figure 1: Map showing two designated historic districts, the potential North Railroad District and the proposed crossing closure sites.
Base Map Source: City of Santa Rosa Historic Preservation Districts, April 2004

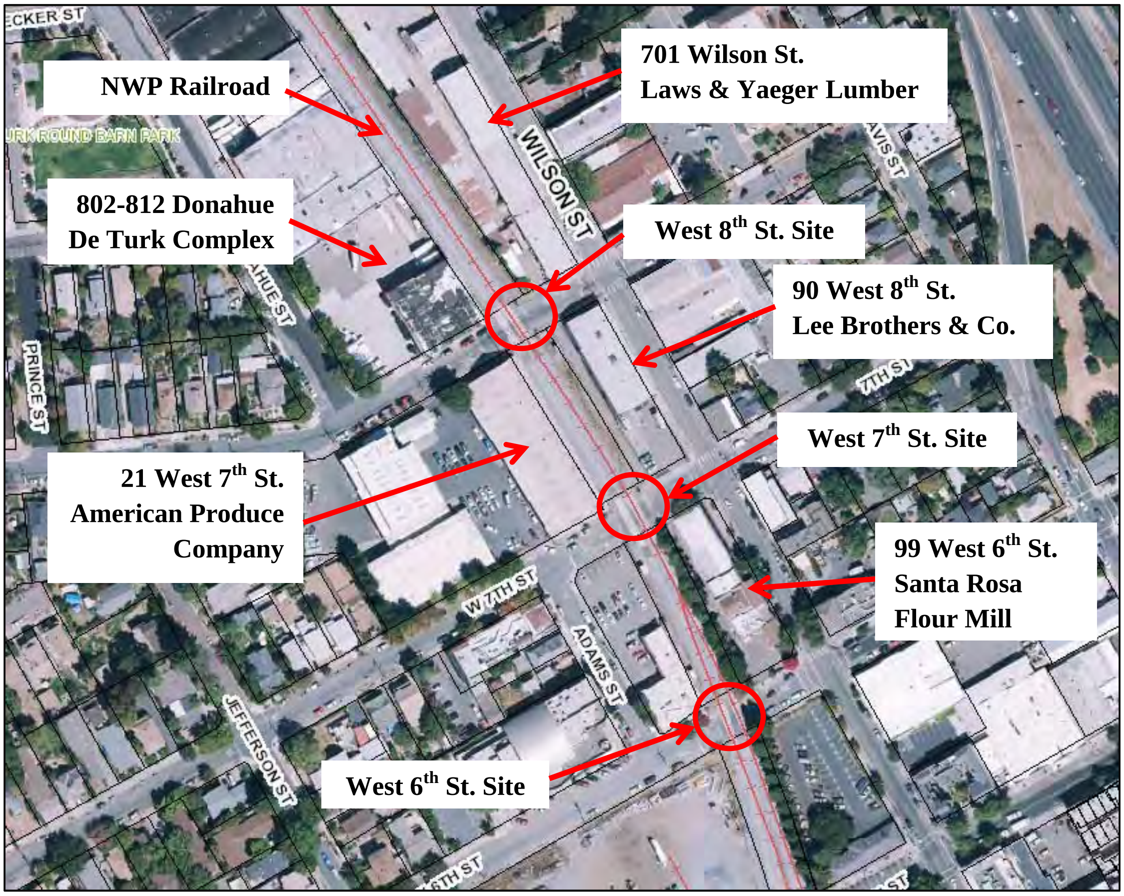


Figure 2: Aerial view of the proposed at-grade crossing closure sites and the identified historical resources within the immediate vicinity of each site.

Project Impact Analysis

Determining Significant Effects on Historical Resources

Jennings Avenue Project Site

No historic resources were identified within the Jennings Avenue project site. Therefore, neither alternative of the proposed project (an at-grade crossing or an overcrossing) would have any impact on historic resources as defined by CEQA.

Proposed Crossing Closure Sites

CEQA Impact Analysis

There are multiple historic resources within the immediate project vicinity of the three proposed crossing closures including the railroad tracks themselves. Therefore, the proposed project alternatives will be evaluated to determine if the alternatives would cause a substantial adverse change to the significance of a historical resource as defined by CEQA Guidelines §15064.5, which states:

> (b) A project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.
>
> (1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
>
> (2) The significance of an historical resource is materially impaired when a project:
>
>> (A) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or
>>
>> (B) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
>>
>> (C) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

> (3) Generally, a project that follows the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* (1995), Weeks and Grimmer, shall be considered as mitigated to a level of less than a significant impact on the historical resource.

City of Santa Rosa Impact Analysis

The City of Santa Rosa provides local guidelines for processing review procedures for owners proposed alterations to properties within designated preservation districts or individually designated landmark properties. The City has accepted the *Secretary of the Interior's Standards for Rehabilitation* (the Standards) for assessing the impacts of alterations to historic resources and their significance. A finding of consistency with the applicable standards is required for approval of a Landmark Alteration Permit.

The City also specifies which project types are subject to review by the Cultural Heritage Board. Project types that are relevant to the subject proposed project that must go before the Board include fences whenever they require a Conditional Use Permit or Zoning Variance and projects involving historic resources that will be approved by the Design Review Board or the Planning Commission. Additionally, the Board may review projects that the staff of the Department of Community Development determines may have some impact on an adjacent or nearby historic resource, is highly visible, or generates strong neighborhood interest.[37]

In reviewing a proposed project's potential impact to historic resources the Board considers the following in order to make their determination (not all apply to the subject project):

> (A) Whether the proposed change is consistent or incompatible with the architectural period of the building;
>
> (B) Whether the proposed change is compatible with any adjacent or nearby landmark structures or preservation district structures;
>
> (C) Whether the colors, textures, materials, fenestration, decorative features and details proposed are consistent with the period and/or are compatible with adjacent structures;
>
> (D) Whether the proposed change destroys or adversely affects an important architectural feature or features;
>
> (E) The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1983 Revision); and
>
> (F) Such other matters, criteria and standards as may be adopted by resolution of the Cultural Heritage Board. (Ord. 2668 § 1, 1988).[38]

[37] City of Santa Rosa, Cultural Heritage Board, Processing Review Procedures for Owners of Historic Properties, (Adopted January 2001): 23-25.
[38] Santa Rosa City Code Chapter 17-22.

Overcrossing Alternative

The overcrossing at the Jennings Avenue alternative would not require the closure of any existing at-grade crossings within the City of Santa Rosa; therefore, there would be no change or impact to any historic resources as defined by CEQA.

At-Grade Crossing Alternative

The proposed at-grade crossing at Jennings Avenue would necessitate the closure of one at-grade crossing at West Sixth Street, Seventh Street or Eighth Street. The crossing closure at any site would not lead to the physical demolition, destruction or relocation of any identified historical resources. The closure of a crossing and the construction of fencing, barriers or bollards would have the potential to impact the historical resources within the immediate surroundings and may potentially materially alter the physical characteristics of the potential North Railroad District (2006). Therefore, the project should comply with the *Secretary of the Interior's Standards* and the City of Santa Rosa's Cultural Heritage Board considerations where applicable. Of the ten Standards issued by the Secretary of the Interior, only the last two, Standards 9 and 10, directly address new construction and will serve as the basis for evaluating the potential impacts of the proposed project on the District.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

   Comment: It does not appear that the project would destroy any historic material that characterizes any of the contributing historic properties in the vicinity of the potential crossing closure sites, because the work would be contained within the street right-of-way and along the edge of the railroad property which already maintains numerous modern intrusions. Approximately half of the properties within the project area feature modern fencing along the railroad tracks. Care should be taken not to remove any feature identified in the 2006 assessment of the NWP railroad tracks at this location such as: a switching device, signal shelter, siding, extended ties, 54-mile post, whistle board and X-markers.[39]

   The railroad tracks themselves have been identified as a contributing resource to the potential North Railroad District (2006), but it does not appear that the construction would directly impact the function or appearance of the tracks.

   The design of the features included in the closure project has not been finalized and will be of substantial importance in the assessment of any potential impact on the surrounding potential North Railroad District (2006) and nearby historic resources. In order for the proposed features, which will include fencing and bollards or barriers, to be consistent with Standard 9 they must be

[39] Tom Origer and Associates, Primary Record NWP Railroad between 6th and College, (April 2006). On file at the NWIC Rohnert Park.

differentiated from the old (i.e. they should not appear as if they are original features of the site) and they must be compatible in massing, size, scale, and design to the surrounding historic districts.

The at-grade railroad crossings at West Sixth, Seventh and Eighth Streets have provided access across the railroad tracks since the development of the railroad and surrounding neighborhoods in the late 1800s. The three crossings historically served to connect the West End residential area with Santa Rosa's commercial areas east of the railroad tracks. The streets themselves have never been identified as character defining features or contributing resources within any of the historic resource documentation for any of the districts or individual properties. However, the historic connections between the West End Preservation District, the potential North Railroad District (2006), and the Railroad Square Preservation District were acknowledged in the documentation for both the Railroad Square Preservation District and the potential North Railroad District (2006). Both documents note that the many of the Italian-American residents lived in the West End, constructed buildings in Railroad Square, ran and patronized stores along Wilson Avenue and worked at the local mills and the winery along the railroad tracks.[40]

The proposed crossing closure sites are located within the complex area bordered and bisected by three major transportations routes (the NWP Railroad, U.S. 101 and Hwy 12) and Santa Rosa Creek. Additionally, the West End Preservation District features two differently aligned street grids which abut just west of the crossing locations and limit access within and between the districts. There is only one street that provides a north-south connection between the northern and southern portions of the West End Preservation District, and in particular access to the northern section of the District is quite restricted with West Eighth Street providing the only access into the northern section from Wilson Avenue. Because of the railroad track's proximity to Santa Rosa Creek, there are no crossings across the railroad tracks from between Third Street and West Sixth Street. West Sixth, Seventh and Eighth Streets then provide three crossings over the tracks until the next crossing at West Ninth Street at the northern boundary of the West End District. However, the block from West Eighth Street to West Ninth Street is three times the distance as the blocks between West Sixth, Seventh and Eighth Streets.

Because the crossings were all extant during the various periods of significance for each district, and have historically served as primary connections between the West End Preservation District, the potential North Railroad District (2006) and the Railroad Square Preservation District, as well as primary connections within the potential North Railroad District (2006), it appears that all three crossings potentially contribute to the overall historical significance and understanding of

[40] Dan Peterson, Railroad Square District National Register of Historic Places Nomination Form, (Santa Rosa, 1979): Statement of Significance, item number 8; and Anne Bloomfield, Historic Resource Inventory, North Railroad District, (July 1989): 2.

the three districts. Therefore, for the purposes of this evaluation, each closure site should be assessed for potential impacts to the integrity of the districts in order to determine compliance with Standard 9.[41]

Potential West Sixth Street Closure Site

The West Sixth Street closure site is located between the northern boundary of the Railroad Square Preservation District, the eastern boundary of the West End Preservation District, and the southern boundary of the potential North Railroad District (2006). The NWP Railroad segment and the Santa Rosa Flour Mill (99 West Sixth Street) are the only identified historic resources in the immediate vicinity of the West Sixth Street site. To the west, West Sixth Street dead ends at Santa Rosa Creek and to the east, West Sixth Street continues under U.S. 101 and dead ends at Santa Rosa Plaza. West Sixth Street runs parallel to West Seventh Street and both streets provided a connection from Wilson Street across the railroad tracks and to the southern end of the West End Preservation District, as well as within the potential North Railroad District.

It appears that West Sixth Street at the crossing location falls outside of any established or potential district boundary. As stated above, it does not appear the crossing closure would destroy any historic materials that characterize the railroad. Further, it would not destroy any historic materials that characterize the Santa Rosa Flour Mill or its relationship as a contributor to the potential North Railroad District (2006). The connection across the railroad at West Sixth Street to the southern end of the West End Preservation District would be eliminated, however a connection would still be available at West Seventh Street; therefore the significant connection between the districts and within the potential North Railroad District would essentially remain intact.

Finally, as stated above the new additions (fencing, bollards or barriers) should be designed in order to be differentiated from the old and be compatible with the massing, size, scale, and architectural features to protect the historic integrity of adjacent historic properties and their environment. If not designed in such a manner, the new elements have the potential to indirectly negatively impact the environment of the surrounding historical resources.

Potential West Seventh Street Closure

The West Seventh Street crossing closure site is located within the potential North Railroad District (2006) and at the eastern boundary of the West End Preservation District. Similar to the crossing at West Sixth Street, the crossing at West Seventh Street provides a significant connection and internal access across the railroad tracks within the potential North Railroad District. Individual historical resources previously identified within the immediate vicinity of the

[41] Kay D. Weeks and Anne E. Grimmer, The Secretary of the Interior's Standards for the Treatment of Historic Properties, (Washington D.C.: U.S. Department of the Interior, 1995): 54.

site include the NWP railroad, American Produce Company (21 West Seventh Street), the Santa Rosa Flour Mill (99 West Sixth Street) and the Lee Brothers & Co. warehouse (90 West Eighth Street).

It does not appear that the closure of the existing at-grade crossing would directly impact the railroad or the surrounding historical structures, because it would not destroy any characterizing historic materials. The connection across the railroad at West Seventh Street to the southern end of the West End Preservation District would be eliminated, however a connection would still be available at West Sixth Street; therefore the significant connection between the districts and within the potential North Railroad District would essentially remain intact.

Again any new elements introduced have the potential to indirectly impact the environment of the potential district and the surrounding contributing resources.

Potential West Eighth Street Closure

The West Eighth Street crossing closure site is located at the eastern boundary of the West End Preservation District and within the potential North Railroad District (2006). The crossing at West Eighth Street provides a significant connection and internal access across the railroad tracks within the potential North Railroad District. Individual resources previously identified at the intersection include the NWP railroad, American Produce Company (21 West Seventh Street), part of the De Turk Winery Complex (806 Donahue Street), Laws & Yaeger Lumber building (701 Wilson Street) and the Lee Brothers & Co. warehouse (90 West Eighth Street). Additionally, the Eighth Street site is the only crossing which provides a connection to the northern section of the West End Preservation District..

It does not appear that the closure of the existing at-grade crossing would directly impact the railroad or the surrounding historical structures, because it would not destroy any characterizing historic materials. The connection across the railroad at West Eighth Street to the northern end of the West End Preservation District would be eliminated. The West Eighth Street crossing provides the only direct connection from the potential North Railroad District (2006) to the northern section of the West End Preservation District and the only internal access across the railroad tracks at the northern end of the potential North Railroad District; therefore it appears a significant connection would be lost impacting the integrity of the potential and defined districts.

Again any new elements introduced have the potential to indirectly impact the environment of the potential district and the surrounding contributing resources.

Closure Crossing Individual Site Findings

From an assessment of each individual proposed crossing closure site, it appears that only the closure of the West Eighth Street crossing would impact the overall historic connections between the potential and defined districts, because the West Eighth Street crossing provides the only direct access into the northern section of the West End Preservation District. The significant

connections between the residential component of the West End Preservation District and the commercial and industrial components of the potential North Railroad District (2006) and the Railroad Square Preservation District have been cited in previous assessments.[42]

The introduction of new elements into the crossing closure site has the potential to indirectly impact historical resources within the immediate vicinity of each evaluated location. A crossing closure at the West Sixth Street site appears to have the least potential to impact historical resources because the site is not within the boundaries of a potential or define district and has only two adjacent identified historical resources, which is less than the other two site options.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

    Comment: In order to fully assess the project under Standard 10, a completed design would be required, however if all proposed features of the new crossing closure are installed in such a manner as not to physically impact any existing features (the railroad tracks or contributing buildings), then the removal of the crossing features would leave the overall form and integrity of the identified historical resources within the immediate crossing vicinity unimpaired.

Additional considerations the Cultural Heritage Board might review relative to the proposed project include:[43]

(B) Whether the proposed change is compatible with any adjacent or nearby landmark structures or preservation district structures;

Comment: In relation to nearby structures, the proposed fencing, barriers, or bollards would need to be designed in such a manner that they were visually compatible to the nearby contributing structures and within the potential historic district.

(C) Whether the colors, textures, materials, fenestration, decorative features and details proposed are consistent with the period and/or are compatible with adjacent structures;

Comment: Similar to the previous comment, the details and design of the features included within proposed closing would need to be compatible with the potential district and any adjacent historic structures.

(D) Whether the proposed change destroys or adversely affects an important architectural feature or features;

[42] NRHP nomination, north railroad district evaluations
[43] Santa Rosa City Code Chapter 17-22 Historic and Cultural Preservation §17-22.094.

Comment: It does not appear that the proposed changes would adversely affect any important architectural features of any identified resources in the crossing's immediately vicinity.

(E) The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Building (1983 Revision)

Comment: Consistency with the *Secretary of the Interior's Standards* is discussed above.

Project Impact

It does not appear that closing of an at-grade crossing at West Sixth Street, West Seventh Street or West Eighth Street would have a direct impact on any of the identified historical buildings or the identified railroad segment within the immediate vicinity of each site, as it would not physically alter or materially impair these resources.

It does appear that an at-grade crossing closure at West Eighth Street would indirectly impact the designated and potential historic districts by blocking the only connection across the railroad tracks from Wilson Avenue into the northern section of the West End Preservation District. Because the West Sixth and Seventh Street crossings both provide access to the southern section of the West End Preservation District, a loss of one crossing would not adversely affect the connection between and within the designated and potential districts.

The potential crossing closure may have an indirect impact on the potential North Railroad District (2006) and the resources within the immediate vicinity of the site unless the fencing, barriers, or bollards are compatible in design to the potential district and the surrounding contributing structures. The proposed design should meet the City's historic design review requirements. The introduction of new elements within the crossing closure site has the potential for a significant adverse impact on historic resources.

Relative to potential impacts on historical resources it appears that the closure of the West Sixth Street crossing would have the least potential to adversely affect any surrounding historical buildings, railroad tracks or districts. The West Sixth Street location falls outside of any potential or defined historic district boundaries and only features two historical resources within the immediate vicinity: the NWP railroad segment and the Santa Rosa Flour Mill (99 West Sixth Street). Further, if the West Sixth Street at-grade crossing were closed, the connection from Wilson Avenue to the southern section of the West End Preservation District would still remain extant at the West Seventh Street crossing, and would therefore not pose an adverse indirect impact.

The West Seventh Street crossing site would be slightly less desirable than the West Sixth Street site because: it is located within the potential North Railroad District (2006) and maintains four identified historical resources within the immediate vicinity including: the NWP railroad segment, American Produce Company (21 West Seventh Street), the Santa Rosa Flour Mill (99 West Sixth Street) and the Lee Brothers & Co. warehouse (90 West Eighth Street). Similar to the condition described above, if the West Seventh Street at-grade crossing were closed, the connection from Wilson Avenue to the southern

section of the West End Preservation District would still remain extant at the West Sixth Street crossing, and would therefore not pose an adverse indirect impact.

The West Eighth Street crossing site would have the most potential to adversely impact historical resources. First, the West Eighth Street crossing site maintains five historical resources within its immediate vicinity including: the NWP railroad segment, American Produce Company (21 West Seventh Street), part of the De Turk Winery Complex (806 Donahue Street), Laws & Yaeger Lumber building (701 Wilson Street) and the Lee Brothers & Co. warehouse (90 West Eighth Street). Additionally, the West Eighth Street crossing provides the only connection directly from Wilson Ave across the railroad tracks to the northern section of the West End Preservation District.

Recommended Mitigation Measures

New site elements are proposed to be included at the crossing closure location including fencing, barriers or bollards. The overall design of the crossing closure elements shall be in conformance with the Secretary of the Interiors Standards, the development standards of the Historic (-H) combining district and the Station Area (-SA) combining district, and the City of Santa Rosa's Design Guideline for Historic Properties.

Relevant recommendations include:

- The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment. (Secretary of the Interior's Standard 9)
- New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (Secretary of the Interior's Standard 10)
- Any fencing or walls should be decorative in nature, and should not be solid or opaque. Materials such as wrought iron, metal or wood are encouraged. (City of Santa Rosa Design Guideline 2.6.4)
- Design new fences to be compatible with the architectural style, material, scale and era of the … neighborhood. (City of Santa Rosa Design Guidelines 4.7-5)
- Barriers likely would not be compatible with the associated historical resources. Bollards are a more compatible choice. Provide bollards that are attractive, functional, easy to maintain and enhance the identity of the neighborhood that they are located within. Install the bollard type identified for the Railroad Square Sub-area and identified in Street Furnishing Palette Plan dated September 20, 2010. (City of Santa Rosa Design Guidelines, 2.6.9)

Conclusion

The proposed Jennings Avenue Pedestrian and Bicycle rail crossing includes two project alternatives: an overcrossing and an at-grade crossing. At the request of the CPUC the at-grade crossing would require

that one existing at-grade crossing within the City of Santa Rosa be closed. The possible closure site would be located at West Sixth Street, West Seventh Street or West Eighth Street.

Overcrossing Alternative

No historical resources were identified within the Jennings Avenue crossing project area; therefore, the construction of an overcrossing would have no impact on any historical resources at the Jennings Avenue location. The overcrossing does not require the closure of any existing at-grade crossings within the City of Santa Rosa; therefore, there would be no additional impacts to any historical resources outside of the project area.

At-grade Alternative

No historical resources were identified within the Jennings Avenue crossing project area; therefore, the at-grade project alternative would have no impact on any historical resources at the Jennings Avenue location.

The at-grade crossing alternative would include the closing of one existing at-grade rail crossing at West Sixth, Seventh, or Eighth Street. Two designated historic districts, one potential historic district, and six historical resources were identified within the immediate vicinity of the three proposed crossing closure sites. It does not appear that the proposed crossing closure at any one of the three sites would constitute a direct adverse impact to any identified historical resources, because there would be no physical destruction of any character defining features of the historical resources. The closure of the West Eighth Street crossing site would potentially constitute an indirect adverse impact by removing the only direct connection between Wilson Street, the potential North Railroad District (2006) and the northern section of the West End Preservation District, as well as within the northern segment of the potential North Railroad District.

The closing of either the West Sixth Street or West Seventh Street crossing does not appear to constitute an adverse indirect impact, because the significant connection from Wilson Street in the potential North Railroad District (2006) to the southern section of the West End District would still remain intact at one location. Additionally, the proposed project elements including fencing, barriers, or bollards, have the potential to cause a significant adverse impact to the historical resources within each of the three crossing closures sites depending on the executed design. Therefore the new elements should be designed in compliance with the *Secretary of the Interior's Standards* and the City of Santa Rosa Design Guidelines, and should be compatible with the adjacent historical resources as well as the surrounding designated and potential historical districts.

Consultant Qualifications

Pursuant to Code of Federal Regulations, 36 CFR Part 61, the author, Kimberly Butt, AIA, meets the Secretary of the Interior's qualification standards for professionals in historic architecture and architectural history.

References

Beard Vicki. Historic Resource Inventory, American Produce Co. Rohnert Park, July 2006. On file at the Northwest Information Center (NWIC), Rohnert Park.

___. Historic Resource Inventory, De Turk Winery Complex. Rohnert Park, August 2006. On file at the NWIC, Rohnert Park.

___. Historic Resource Inventory, Huntington's Planing Mill, April 2007. On file at the NWIC, Rohnert Park.

___. Historic Resource Inventory, Lee Bros & Co Warehouse. Rohnert Park, July 2006. On file at the NWIC, Rohnert Park.

___. Historic Resource Inventory, North Railroad District. Rohnert Park, August, 2006. On file at the NWIC, Rohnert Park.

___. Historic Resource Inventory, Northwestern Pacific Railroad. Rohnert Park, April, 2006. On file at the NWIC, Rohnert Park.

___. Historic Resource Inventory, Santa Rosa Flour Mill. Rohnert Park, August 2006. On file at the NWIC, Rohnert Park.

Bloomfield, Anne. *Cultural Heritage Survey of the City of Santa Rosa*. San Francisco, August 1989. http://www.srpast.org/SRPAST/Research_Resources.html (Accessed March-July 2014). Note: Historic Resource Inventory Forms for individual resources and districts are included within the *Cultural Heritage Survey*.

California Register and National Register: A Comparison, California Office of Historic Preservation Technical Assistance Series, no. 6. Sacramento, CA: California Department of Parks and Recreation, 2006.

California Register of Historical Resources: The Listing Process, California Office of Historic Preservation Technical Assistance Series, no. 5. Sacramento, CA: California Department of Parks and Recreation, n.d.

City of Santa Rosa. Cultural Heritage Board. Processing Review Procedures for Owners of Historic Properties. Adopted January 9, 2001. Numeration added September 2006.

___. *City Code*. Quality Code Publishing: December 2011. http://ci.santa-rosa.ca.us/departments/cityadmin/cityclerk/Pages/CityCode.aspx (accessed March 2012.)

___. *Santa Rosa General Plan 2035*. Santa Rosa, November 3, 2009.

Clark, Susan M. and Holly L. Hoods. Historic Resource Inventory, Ettore Novelli Farmstead. Santa Rosa, September 2003. On file at the NWIC, Rohnert Park.

Gebhard, David, Roger Montgomery, Robert Winter, John Woodbridge, and Sally Woodbridge. *A Guide to the Architecture of San Francisco and Northern California.* Santa Barbara and Salt Lake City: Peregrine Smith, 1973.

How to Apply the National Register Criteria for Evaluation, National Register Bulletin, no. 15. Washington, D.C.: United States Department of the Interior, 1997.

How to Complete the National Register Registration Form, National Register Bulletin, no. 16A. Washington, D.C.: United States Department of the Interior, 1997.

Kyle, Douglas E. *Historic Spots in California.* Revised edition. Stanford: Stanford University Press, 2002.

LeBaron, Gaye and Joann Mitchell. *Santa Rosa: a Twentieth Century Town.* Santa Rosa: Historia ltd., 1993.

Munro-Fraser, J.P. *History of Sonoma County, California.* San Francisco: Alley, Bowen & Co., 1880.

Peterson, Dan. Railroad Square District National Register of Historic Places Nomination Form. Santa Rosa, 1979.

Sanborn Map Company. 1885. *Santa Rosa*. New York.

Sanborn Map Company. 1893. *Santa Rosa*. New York.

Sanborn Map Company. 1904. *Santa Rosa*. New York.

Sanborn Map Company. 1908. *Santa Rosa*. New York.

Sanborn Map Company. 1950. *Santa Rosa*. New York.

Sonoma County Library Aerial Photography Collection. Santa Rosa Aerial View. August 10, 1964.

Sonoma County, Office of the Assessor. Parcel Maps and Property Details for various parcels. Accessed at http://www.sonoma-county.org/assessor/ParcelMaps.htm May 2014.

Storey, Noelle. Historic Resource Inventory, Rossi Property. Rohnert Park, January 2000. On file at the NWIC, Rohnert Park.

Thomas Thompson & Co. *Map Number Six: Russian River, Santa Rosa, and Analy Townships.* Oakland. 1877.

Thomas Brothers. Map of Santa Rosa and Vicinity. Oakland. 1938.

United States Geological Survey (USGS). Santa Rosa, California Quadrangle. 1916.

___. 1944

___. 1954

User's Guide to California Historical Resource Status Code & Historic Resources Inventory Directory. California State Office of Historic Preservation. Technical Assistance Bulletin, no. 8. Sacramento, CA: California Department of Parks and Recreation, November 2004.

Weeks, Kay and Anne Grimmer. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings.* Washington D.C.: U.S. Department of the Interior, 1995.

Figures

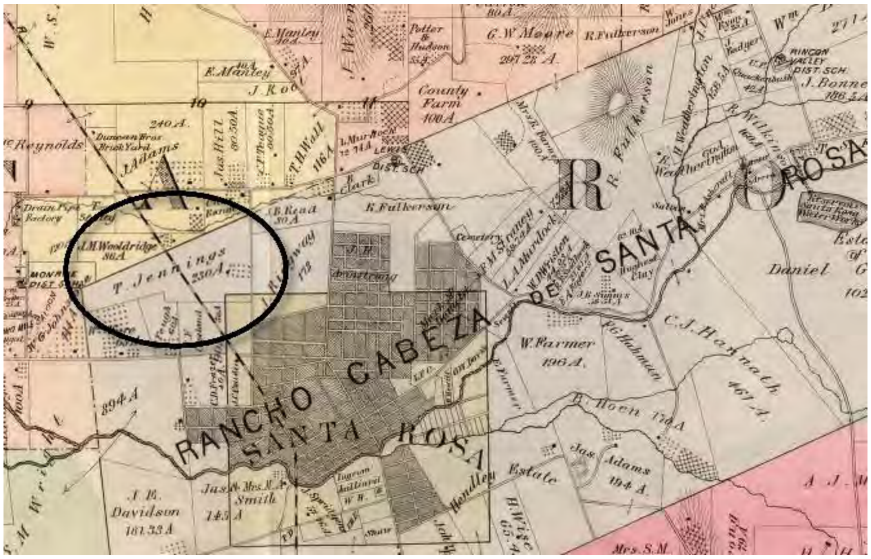


Figure 3: Detail of Map of Santa Rosa, 1877. Note: T. Jennings located in the call out.

Figure 4: Map of Santa Rosa, 1937. Note Jennings Farm located in the call out.

Figure 5: 1964 aerial photograph of the Jennings Avenue project site (circled area).

Figure 6: East side of the proposed project site where Jennings Avenue ends into the railroad right-of-way.

Figure 7: View of Herbert Street looking northwest from Jennings Avenue.

Figure 8: Single-family house at 1573 Herbert Street. Although the building is listed as being over-fifty years old, it has been too significantly altered to convey any potential historic significance.

Figure 9: Modern multi-family housing on Jennings Avenue.

Figure 10: Railroad tracks at Jennings Avenue looking northwest.

Figure 11: Railroad tracks at Jennings Avenue looking southeast.

Figure 12: Office park southwest of the Jennings Avenue crossing site.

Figure 13: Typical multi-family housing at the west side of the Jennings Avenue crossing.

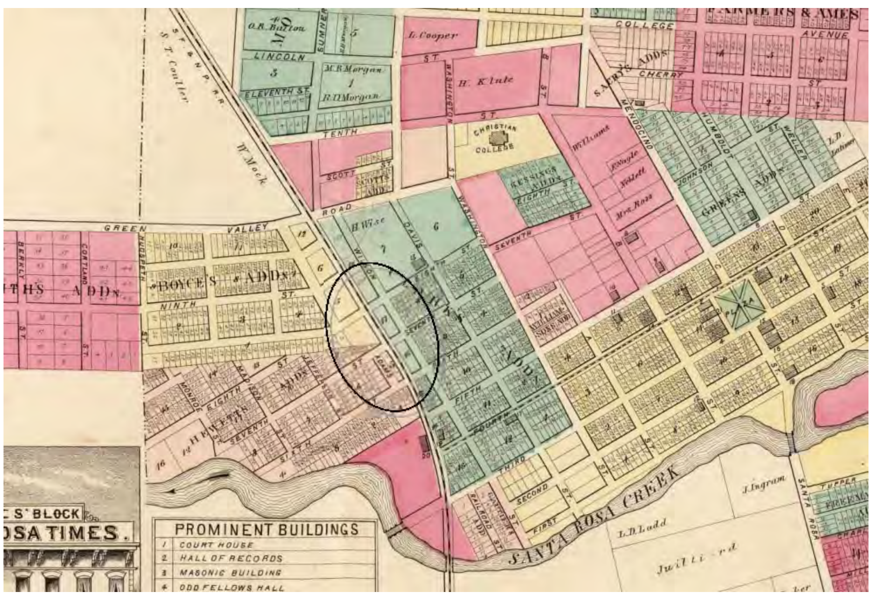


Figure 14:1877 Map of Santa Rosa with the location of the proposed crossing closure sites circled.

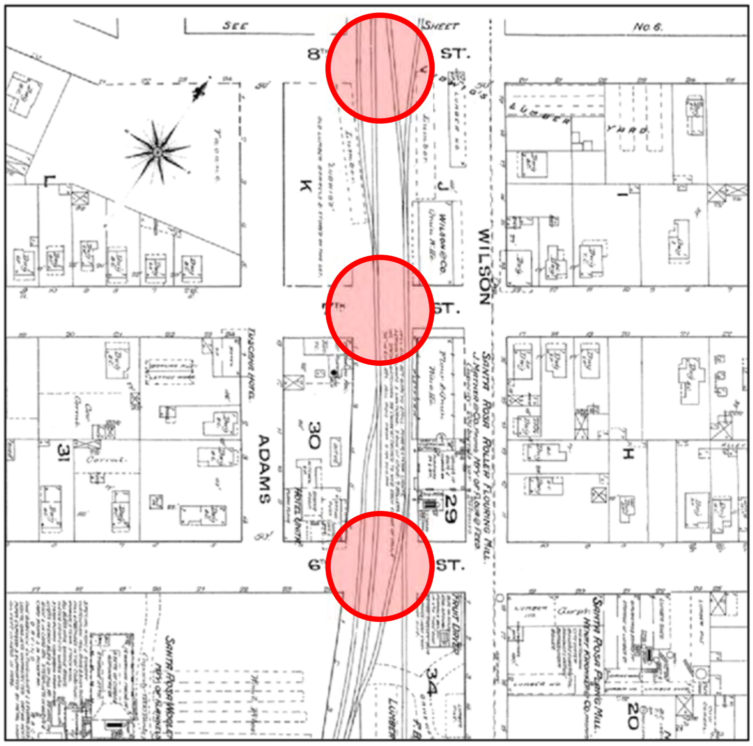


Figure 15: Detail of Sanborn Map, 1885 showing the proposed crossing closure sites. Note: Adams between West Seventh and West Eighth was closed by 1893.

Figure 16: View of the West Sixth Street crossing from Adams Street looking east.

Figure 17: View of the West Sixth Street crossing from Adams Street looking southeast. Note the historic train depot at the far right.

Figure 18: View up Adams Street looking north.

Figure 19: View of the Santa Rosa Flour Mill at the West Sixth Street crossing looking north.

Figure 20: West Seventh Street crossing looking southwest toward Sixth Street.

Figure 21: American Produce Company warehouse at the West Seventh Street crossing looking northwest.

Figure 22: Looking north up the railroad tracks from the West Seventh Street crossing.

Figure 23: View toward the West Eighth Street crossing from near Donahue Street looking southeast.

Figure 24: View of the West Eighth Street crossing looking northwest toward the De Turk Winery Complex.

Figure 25: View of the Lee Brothers & Company warehouse at West Eighth and Wilson Street looking southwest.

Figure 26: View on the east side of Wilson Street looking south toward West Sixth Street.

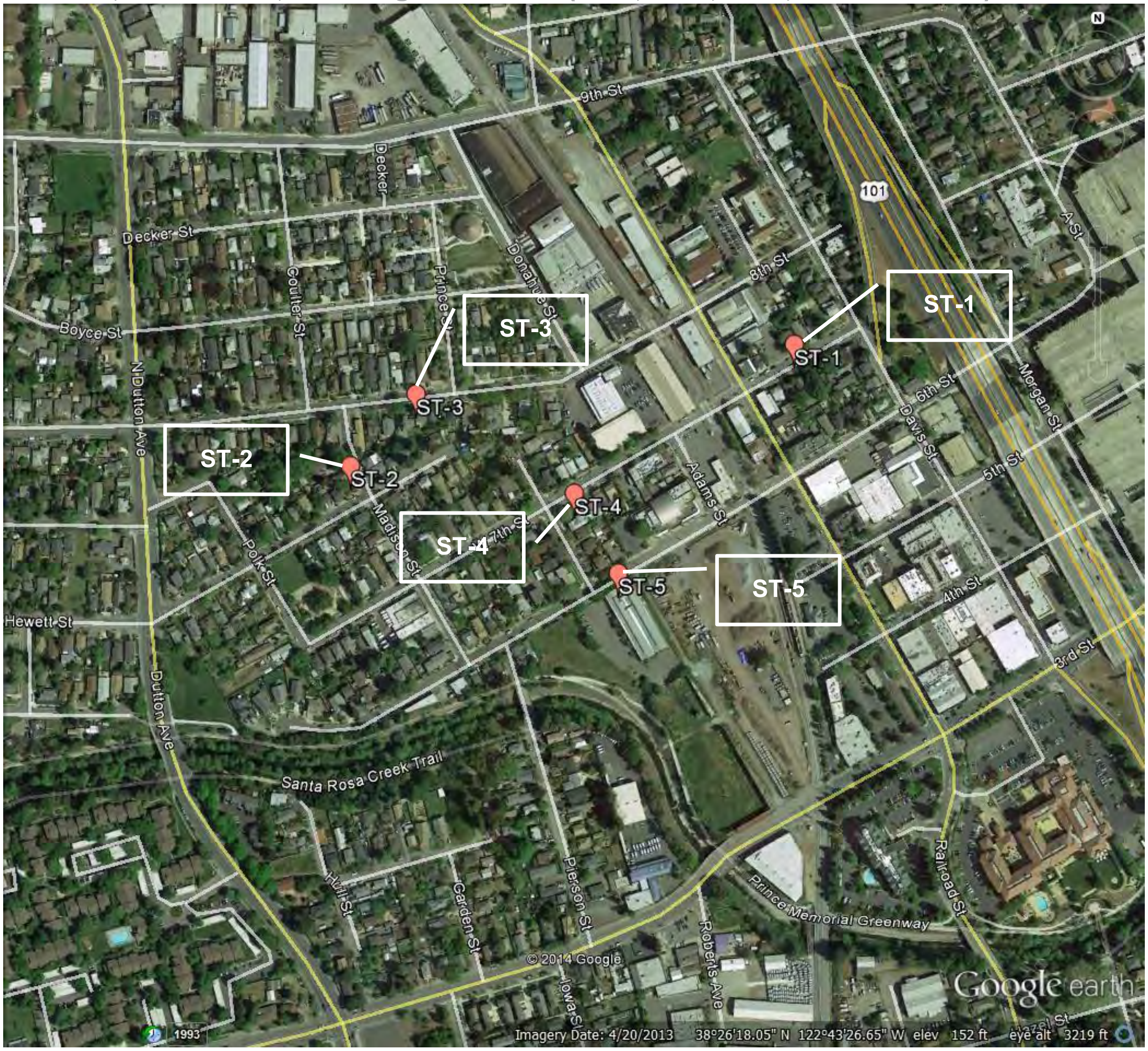
Figure 27: View of the east side of Wilson Street looking north toward West Seventh Street.

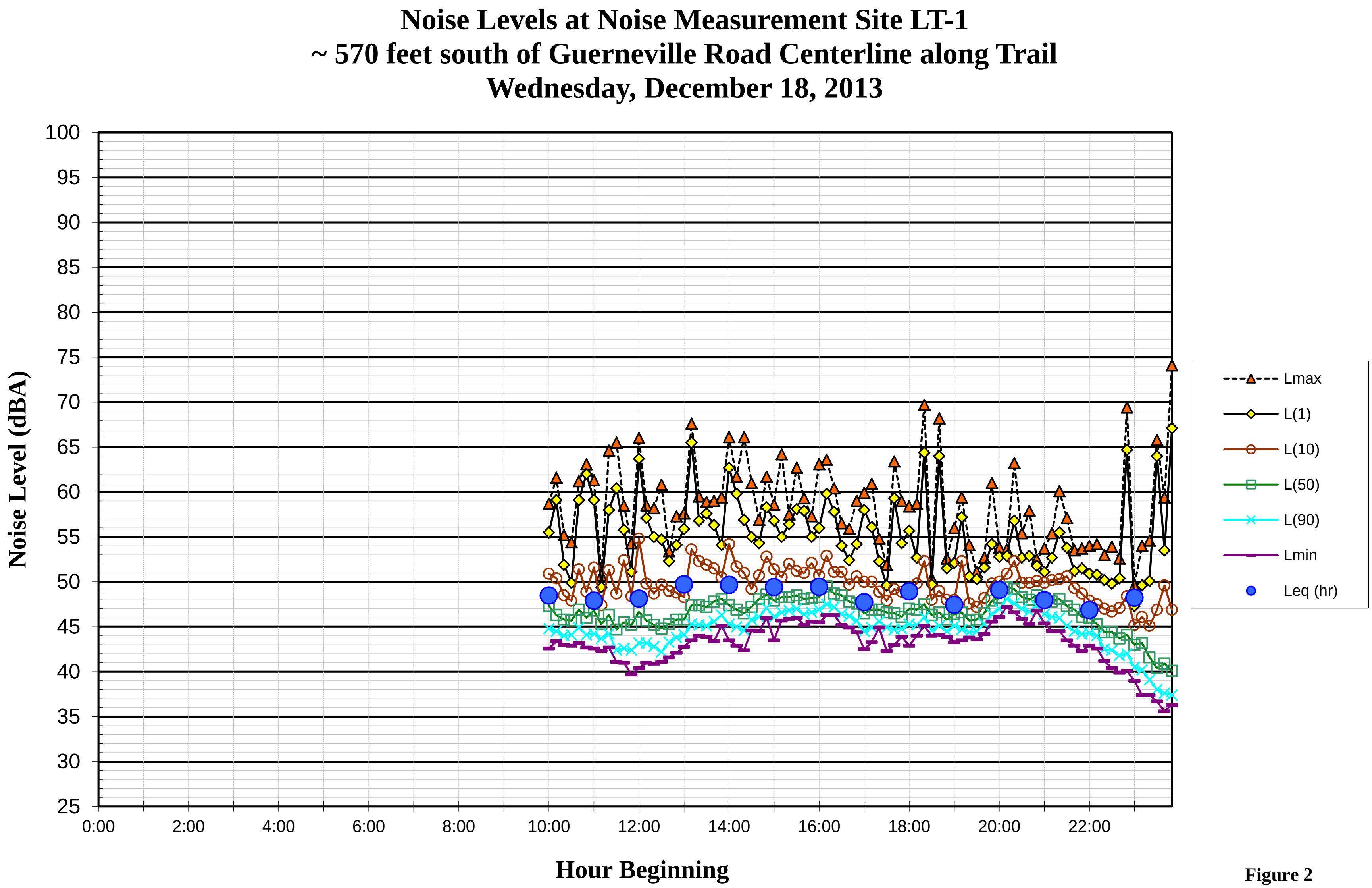
Appendix F

Noise Measurements

Figure 1a - Noise Measurement Locations near Proposed Crossing at Jennings Avenue (LT-1, LT- 2, and LT-3)

Figure 1b - Noise Measurement Locations near Proposed Crossing Closures at W. Sixth, W. Seventh, or W. Eighth Streets (ST-1, ST-2, ST-3, ST-4 and ST-5)




Noise Levels at Noise Measurement Site LT-1
~ 570 feet south of Guerneville Road Centerline along Trail
Wednesday, December 18, 2013
Noise Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
45
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0:00
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Hour Beginning
Lmax
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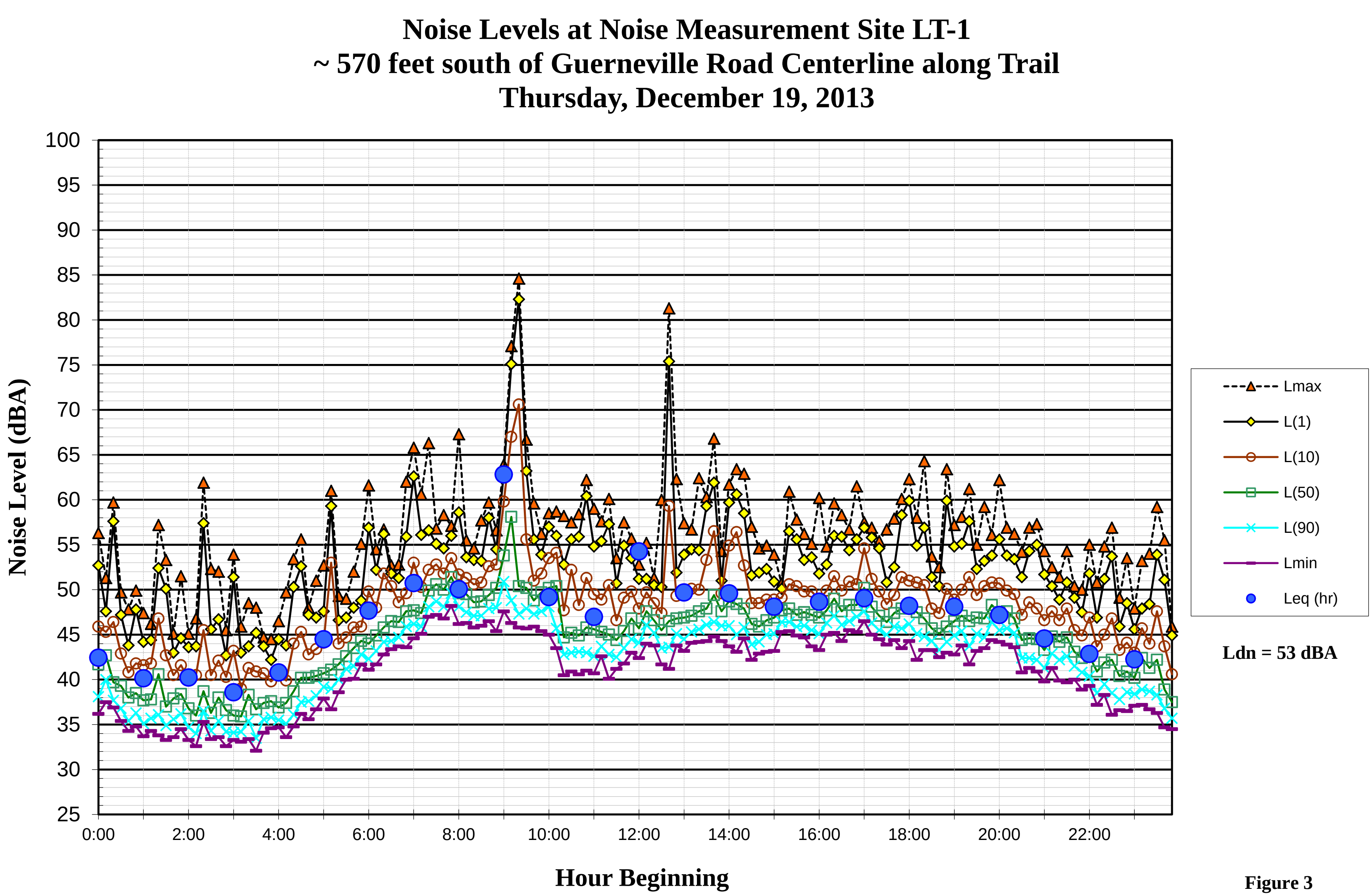
L(90)
Lmin
Leq (hr)

Figure 2



Noise Levels at Noise Measurement Site LT-1
~ 570 feet south of Guerneville Road Centerline along Trail
Thursday, December 19, 2013
Noise Level (dBA)
100
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Hour Beginning
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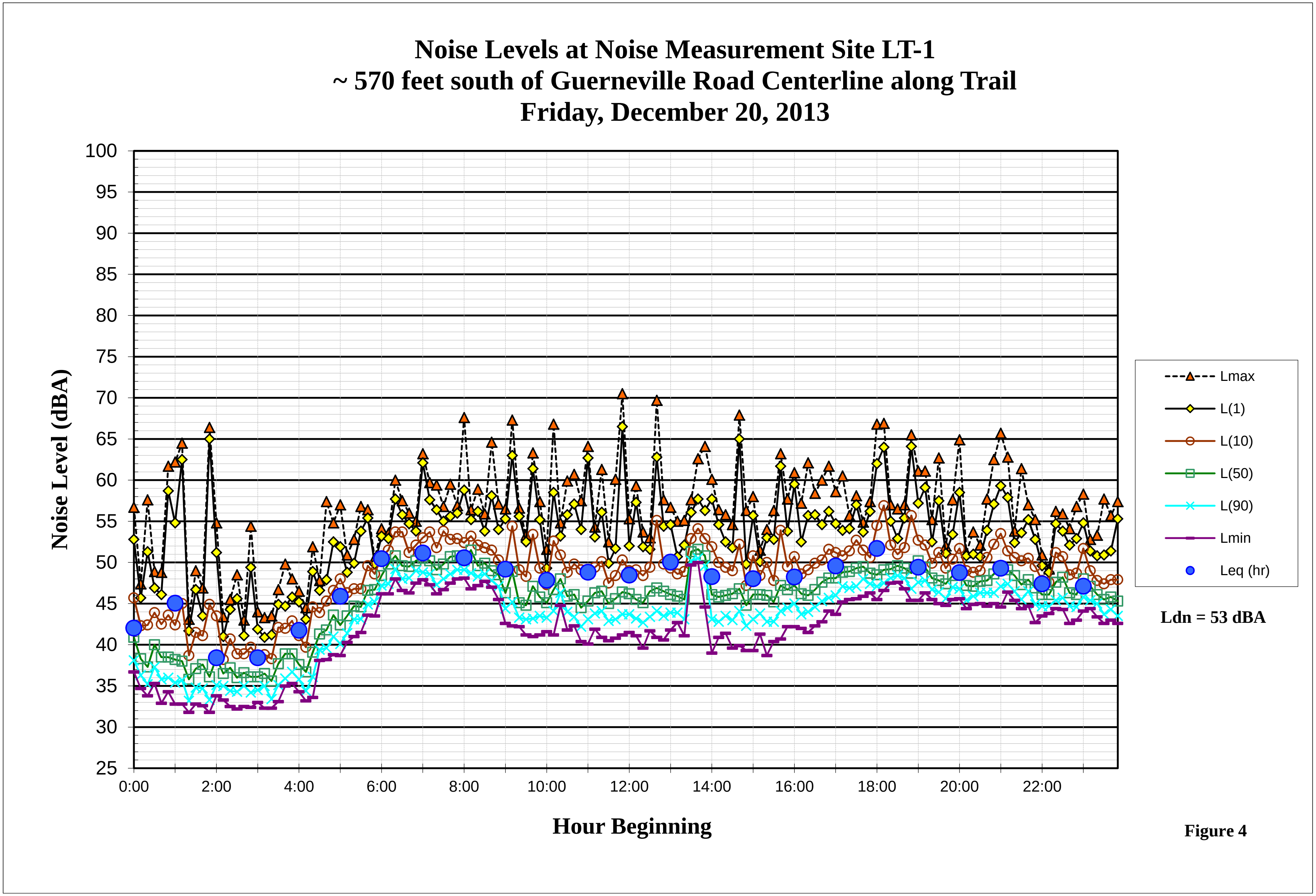
L(50)
L(90)
Lmin
Leq (hr)
Ldn = 53 dBA

Figure 3



Noise Levels at Noise Measurement Site LT-1
~ 570 feet south of Guerneville Road Centerline along Trail
Friday, December 20, 2013
Noise Level (dBA)
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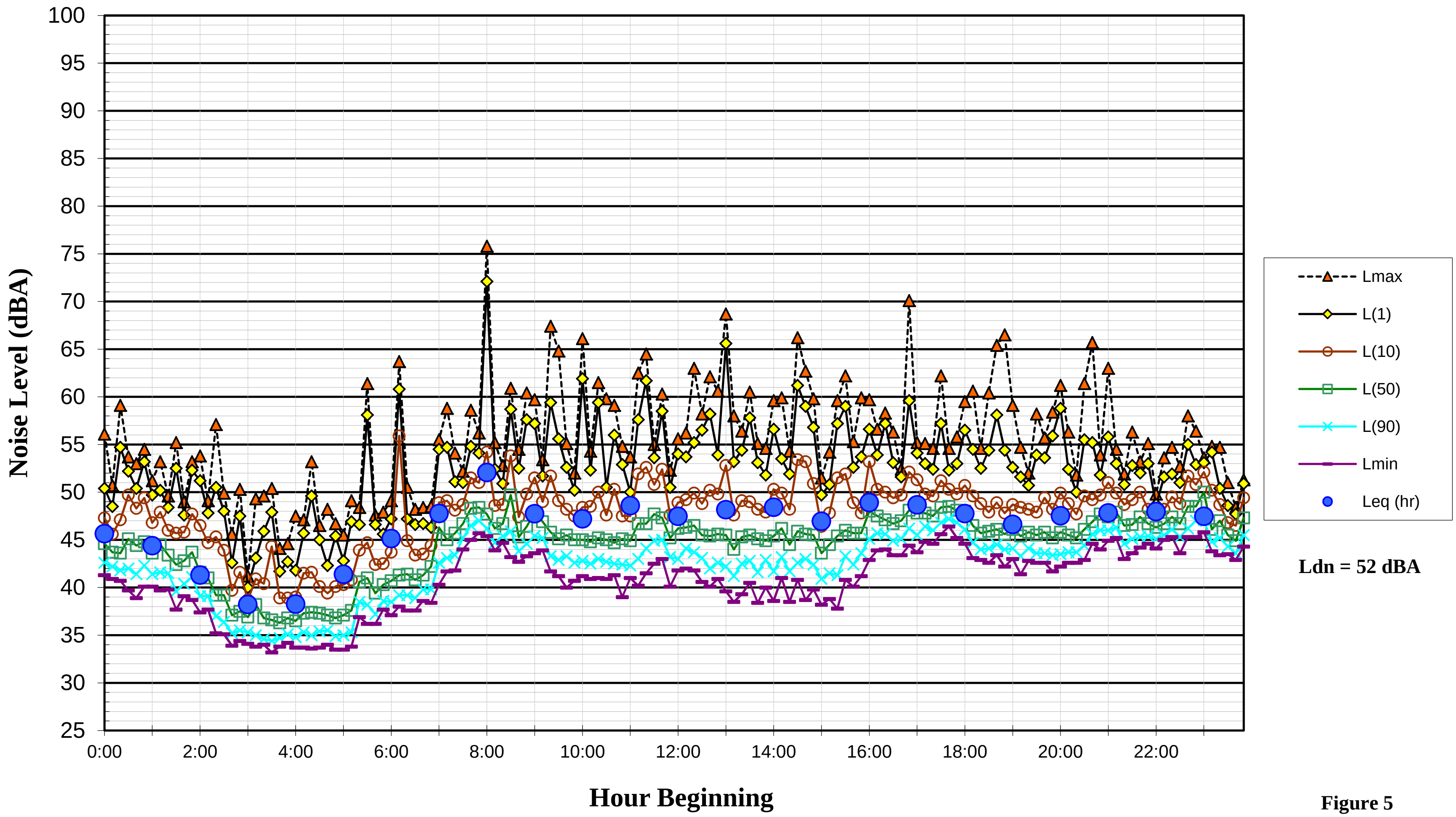
L(90)
Lmin
Leq (hr)
Ldn = 53 dBA

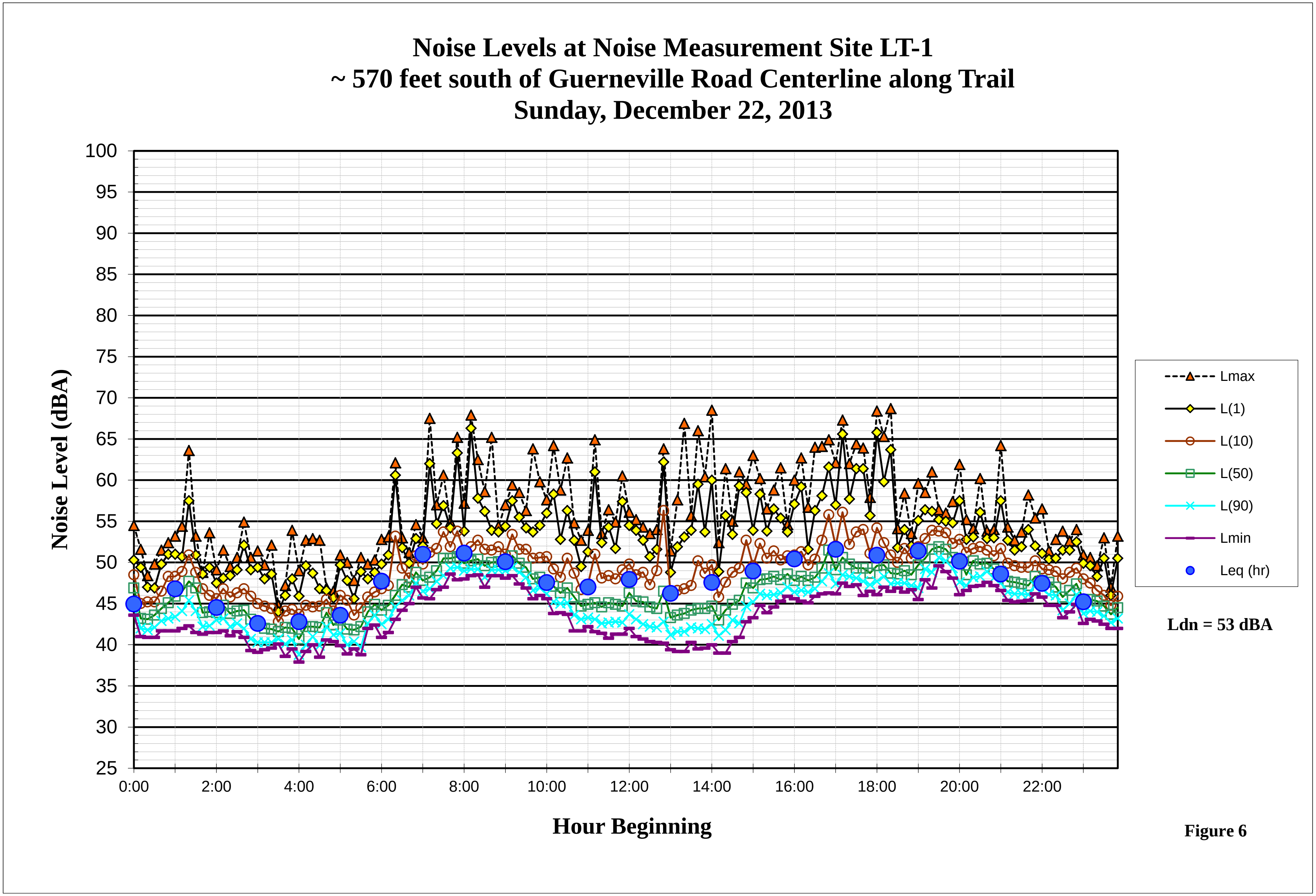
Figure 4

Noise Levels at Noise Measurement Site LT-1
~ 570 feet south of Guerneville Road Centerline along Trail
Saturday, December 21, 2013



Ldn = 52 dBA

Figure 5



Noise Levels at Noise Measurement Site LT-1
~ 570 feet south of Guerneville Road Centerline along Trail
Sunday, December 22, 2013
Noise Level (dBA)
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Hour Beginning
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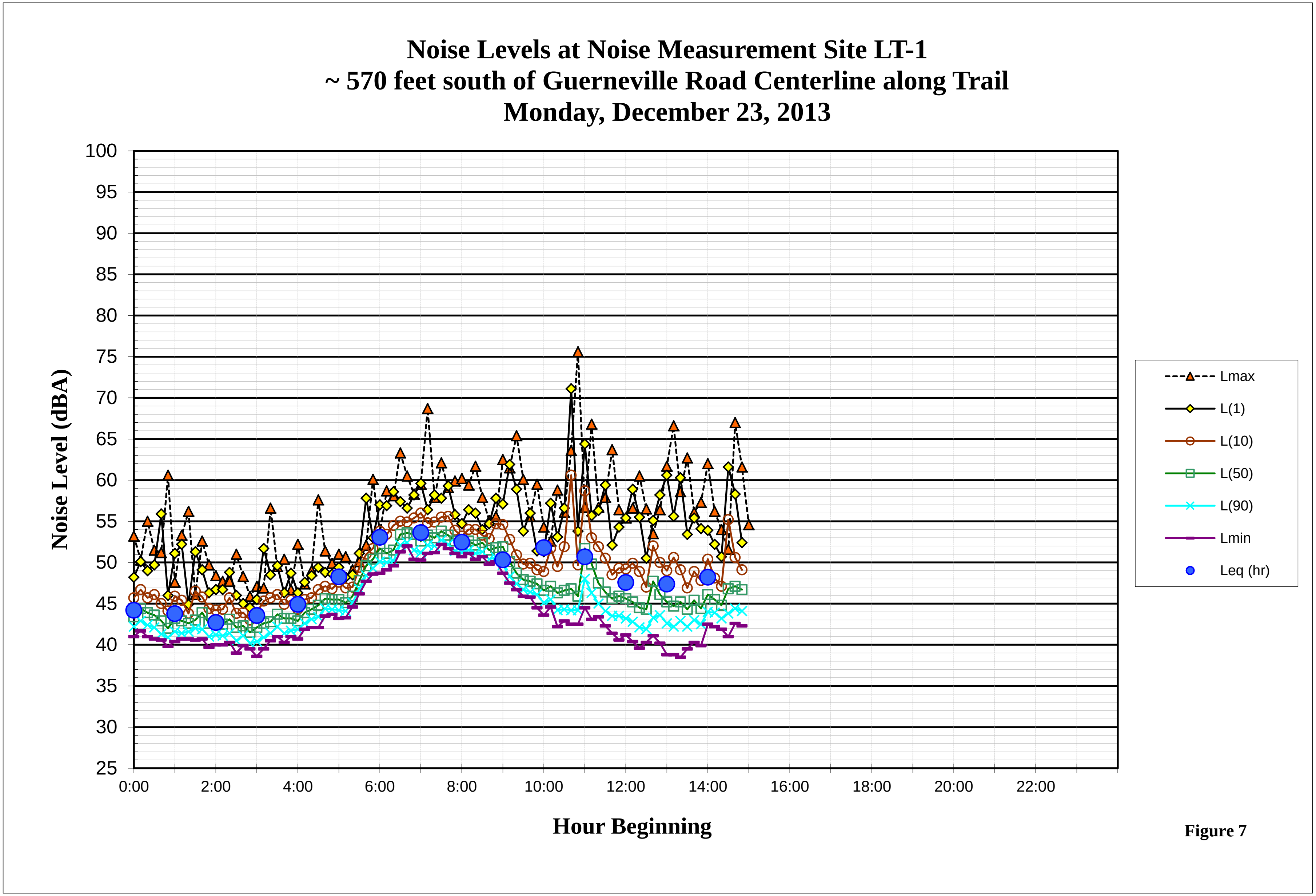
Lmin
Leq (hr)
Ldn = 53 dBA

Figure 6



Noise Levels at Noise Measurement Site LT-1
~ 570 feet south of Guerneville Road Centerline along Trail
Monday, December 23, 2013
Noise Level (dBA)
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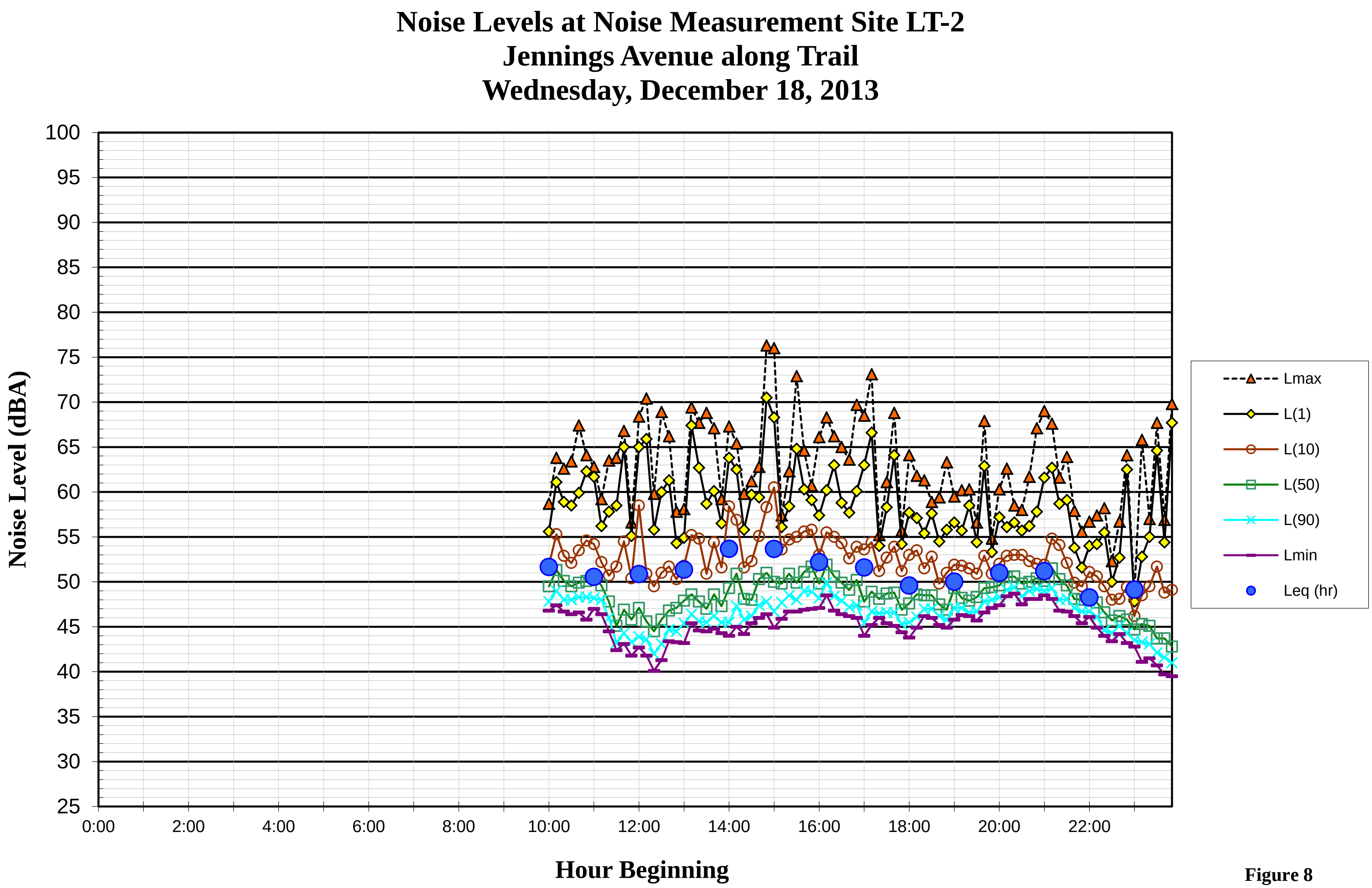
Figure 7



Noise Levels at Noise Measurement Site LT-2
Jennings Avenue along Trail
Wednesday, December 18, 2013
Noise Level (dBA)
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4:00
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Hour Beginning
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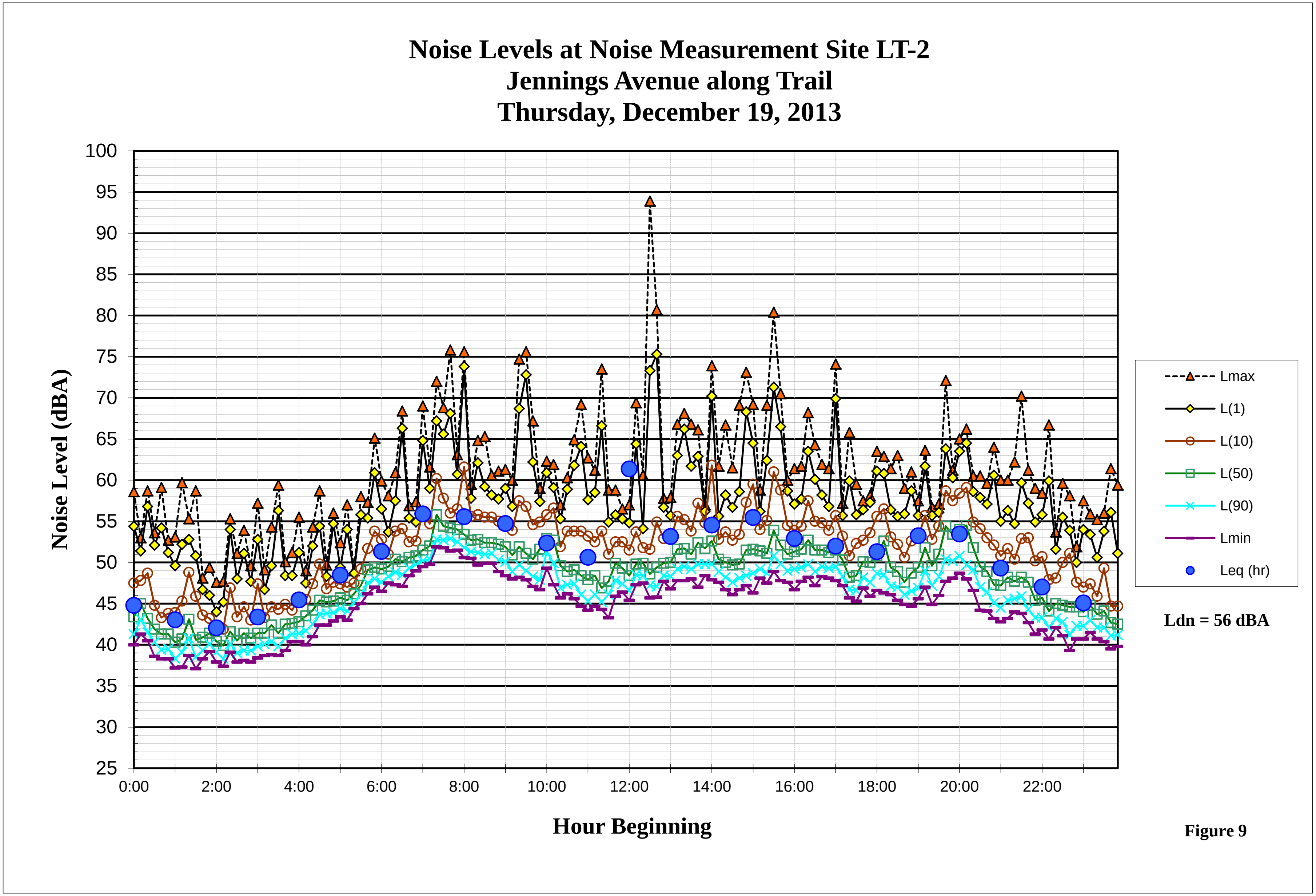
L(50)
L(90)
Lmin
Leq (hr)

Figure 8



Noise Levels at Noise Measurement Site LT-2
Jennings Avenue along Trail
Thursday, December 19, 2013
Noise Level (dBA)
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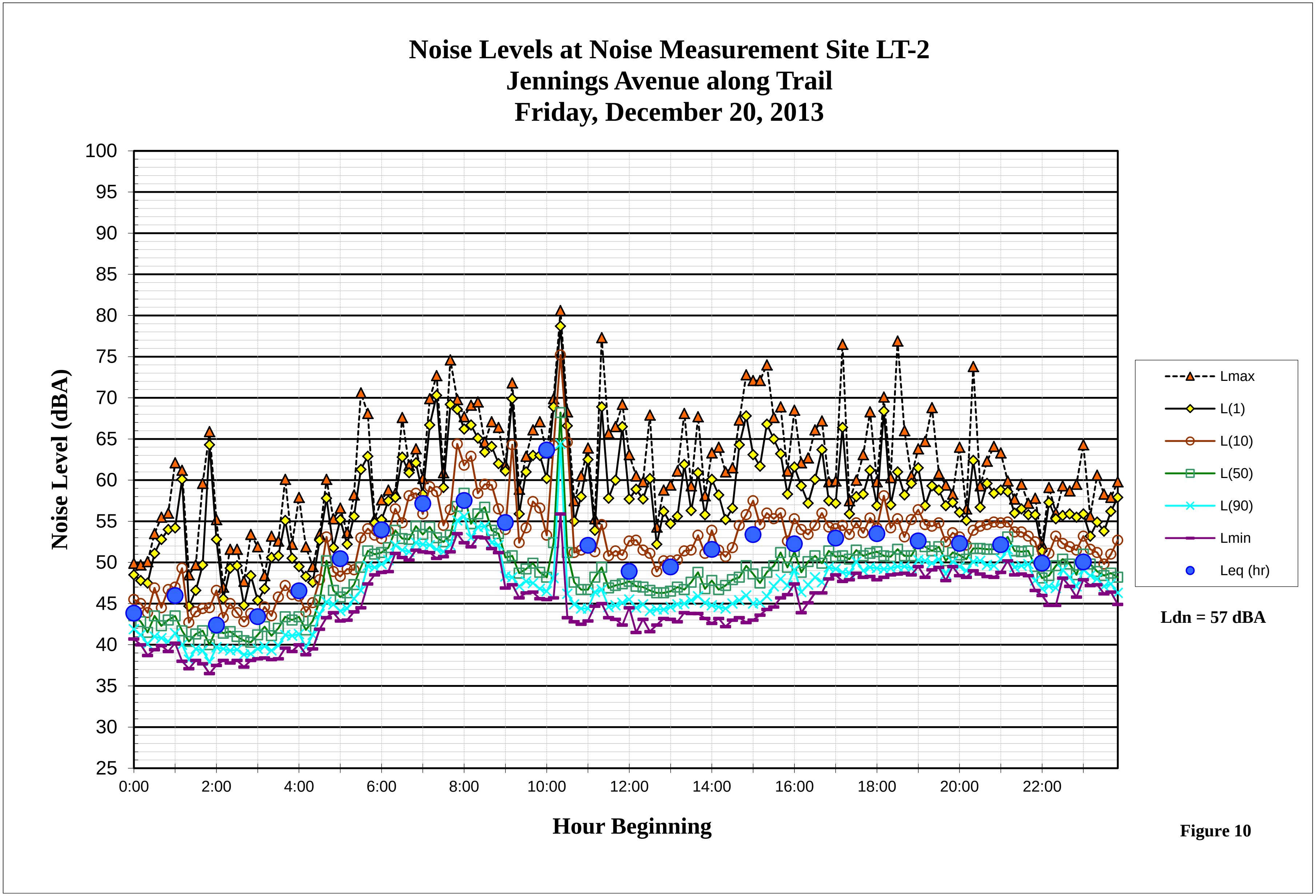
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
Ldn = 56 dBA

Figure 9



Noise Levels at Noise Measurement Site LT-2
Jennings Avenue along Trail
Friday, December 20, 2013
Noise Level (dBA)
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Hour Beginning
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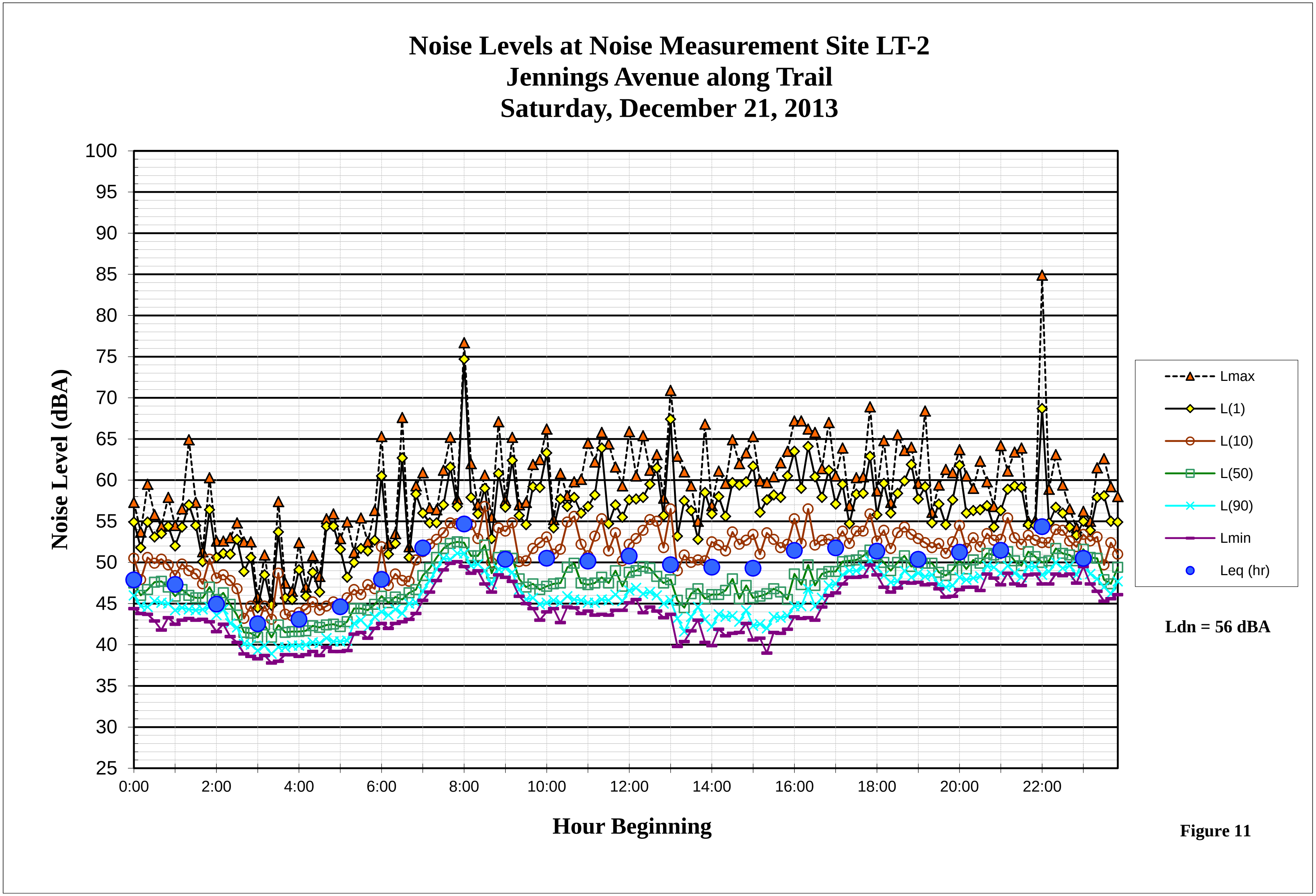
L(50)
L(90)
Lmin
Leq (hr)
Ldn = 57 dBA

Figure 10


Noise Levels at Noise Measurement Site LT-2
Jennings Avenue along Trail
Saturday, December 21, 2013
Noise Level (dBA)
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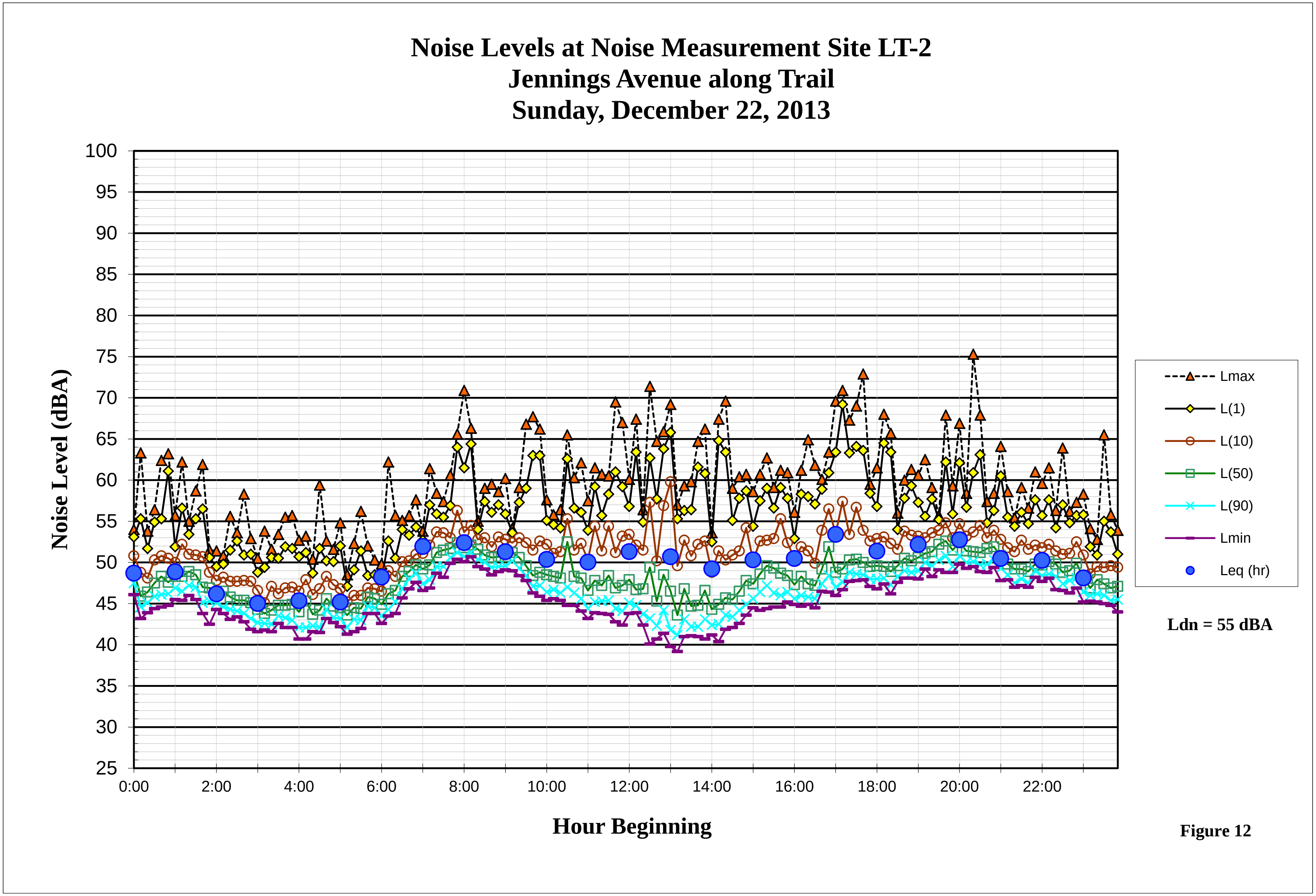
Leq (hr)
Ldn = 56 dBA
Figure 11



Noise Levels at Noise Measurement Site LT-2
Jennings Avenue along Trail
Sunday, December 22, 2013
Noise Level (dBA)
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Hour Beginning
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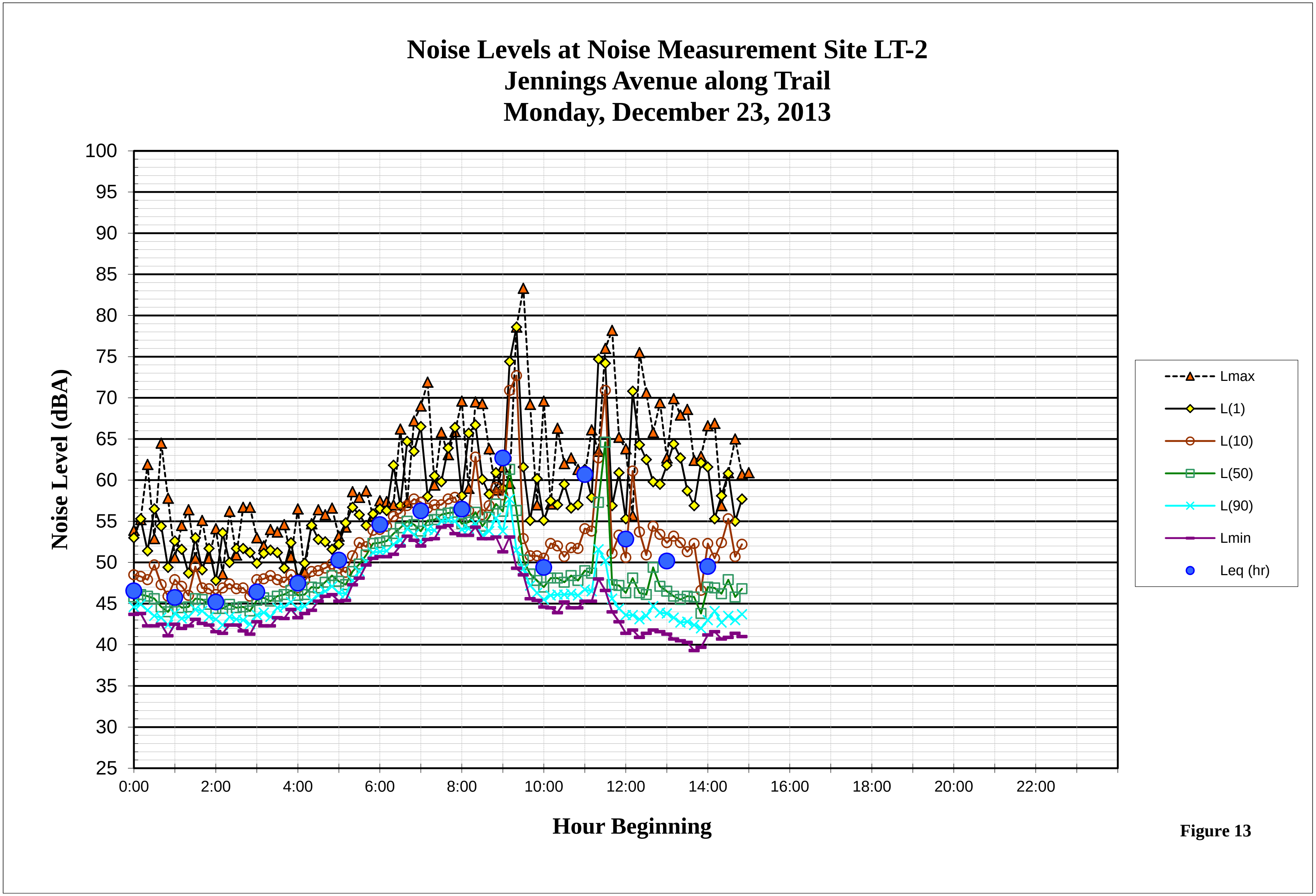
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
Ldn = 55 dBA

Figure 12



Noise Levels at Noise Measurement Site LT-2
Jennings Avenue along Trail
Monday, December 23, 2013
Noise Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)

Figure 13

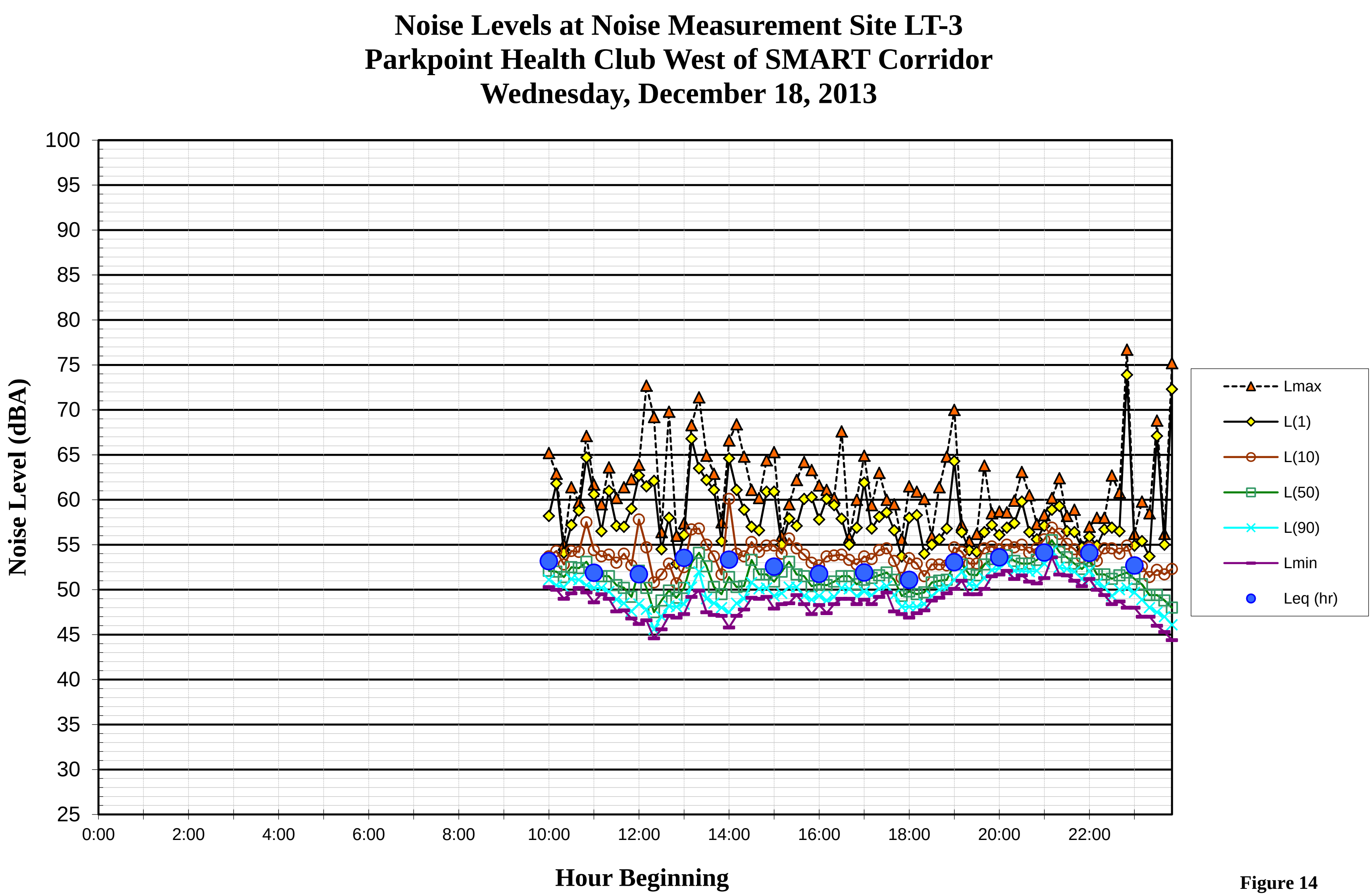

Noise Levels at Noise Measurement Site LT-3
Parkpoint Health Club West of SMART Corridor
Wednesday, December 18, 2013
Noise Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)

Figure 14

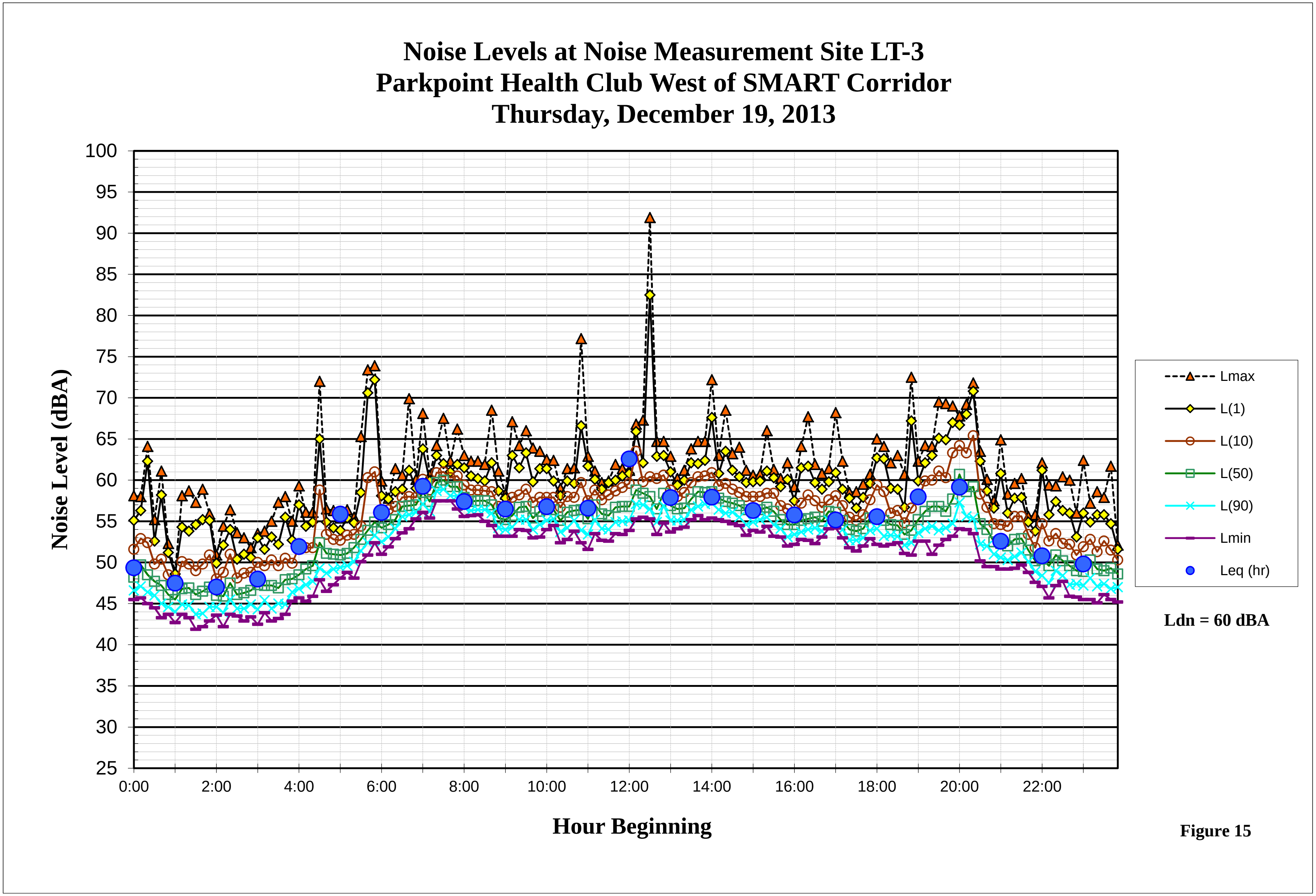
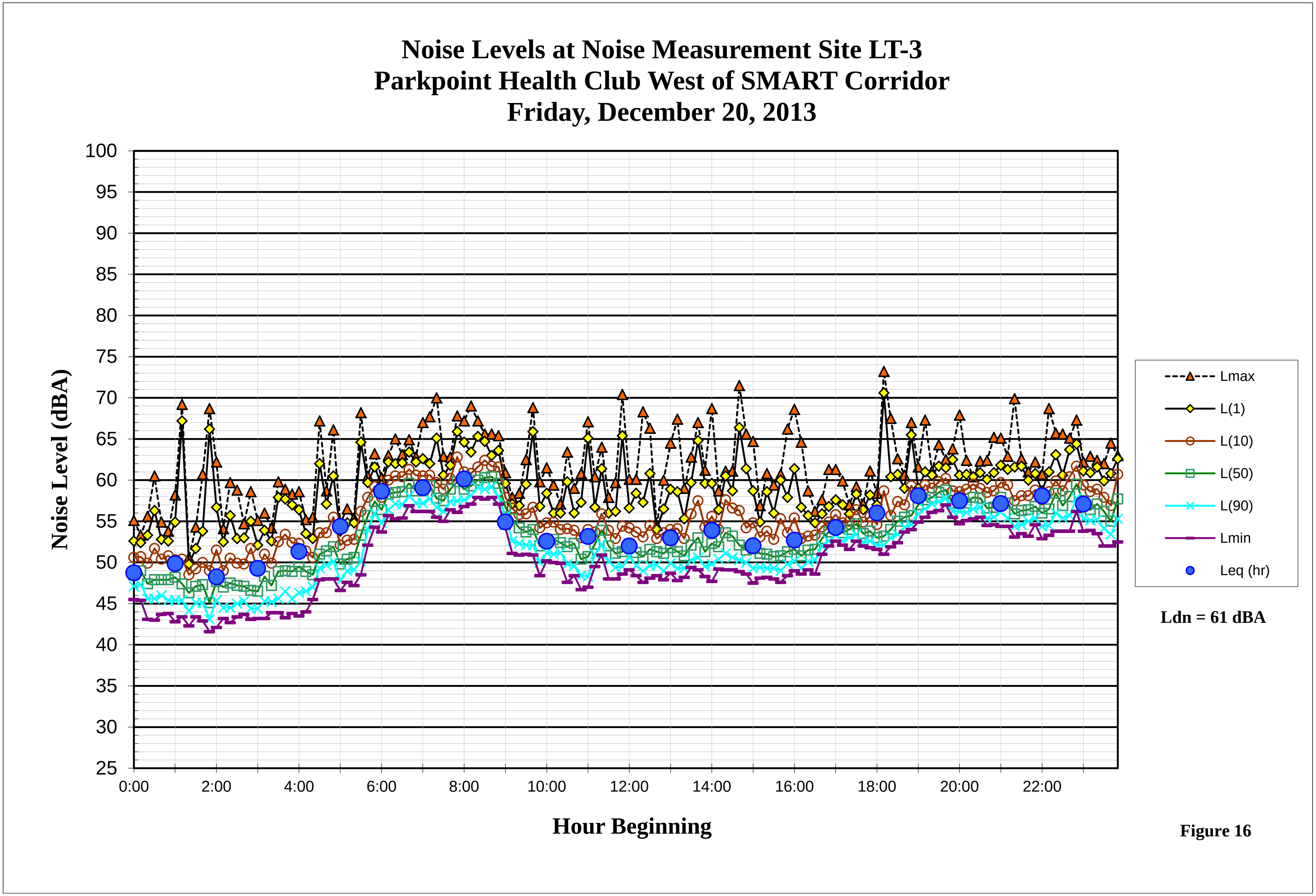

Noise Levels at Noise Measurement Site LT-3
Parkpoint Health Club West of SMART Corridor
Thursday, December 19, 2013
Noise Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
Ldn = 60 dBA

Figure 15



Noise Levels at Noise Measurement Site LT-3
Parkpoint Health Club West of SMART Corridor
Friday, December 20, 2013
Noise Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
Ldn = 61 dBA

Figure 16

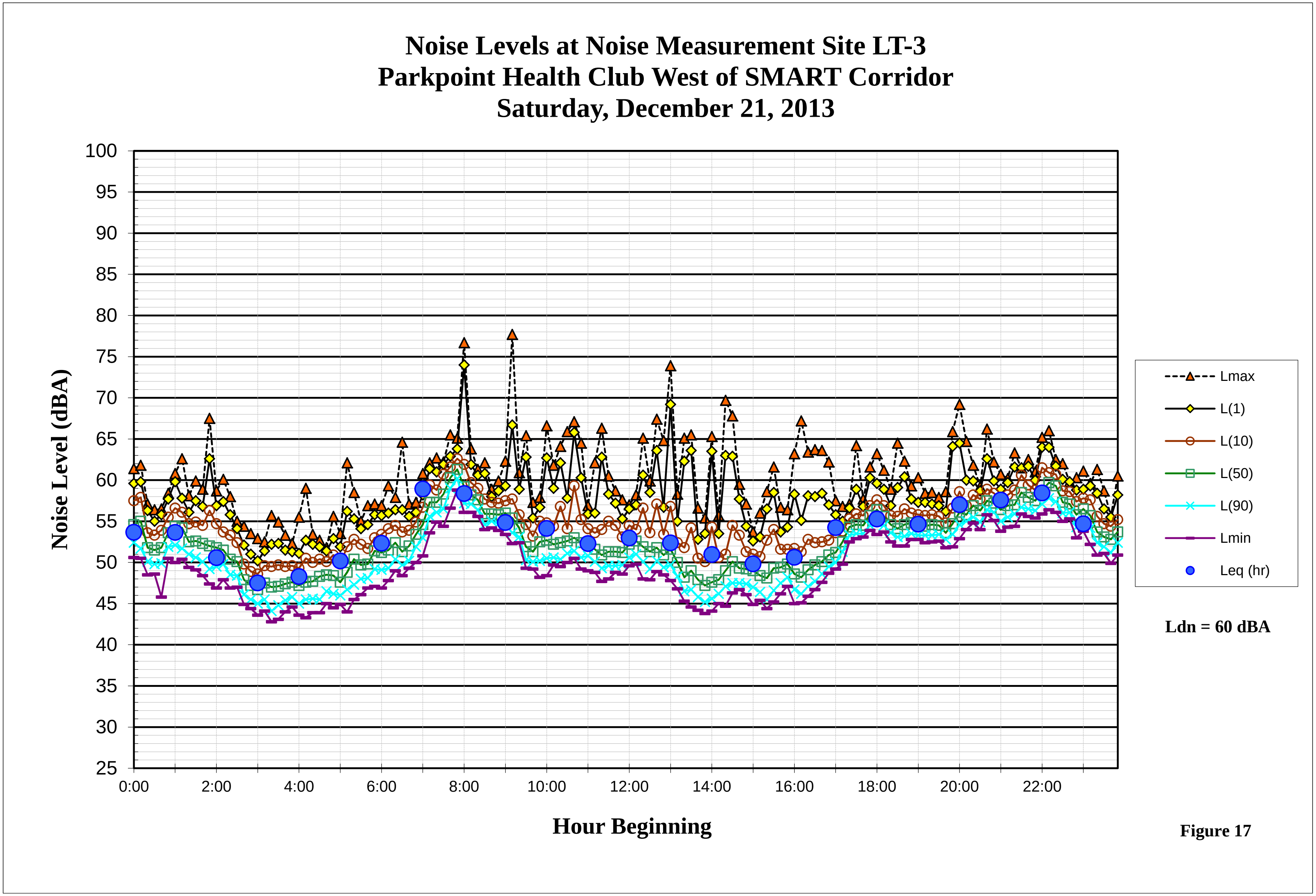

Noise Levels at Noise Measurement Site LT-3
Parkpoint Health Club West of SMART Corridor
Saturday, December 21, 2013
Noise Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
Ldn = 60 dBA

Figure 17

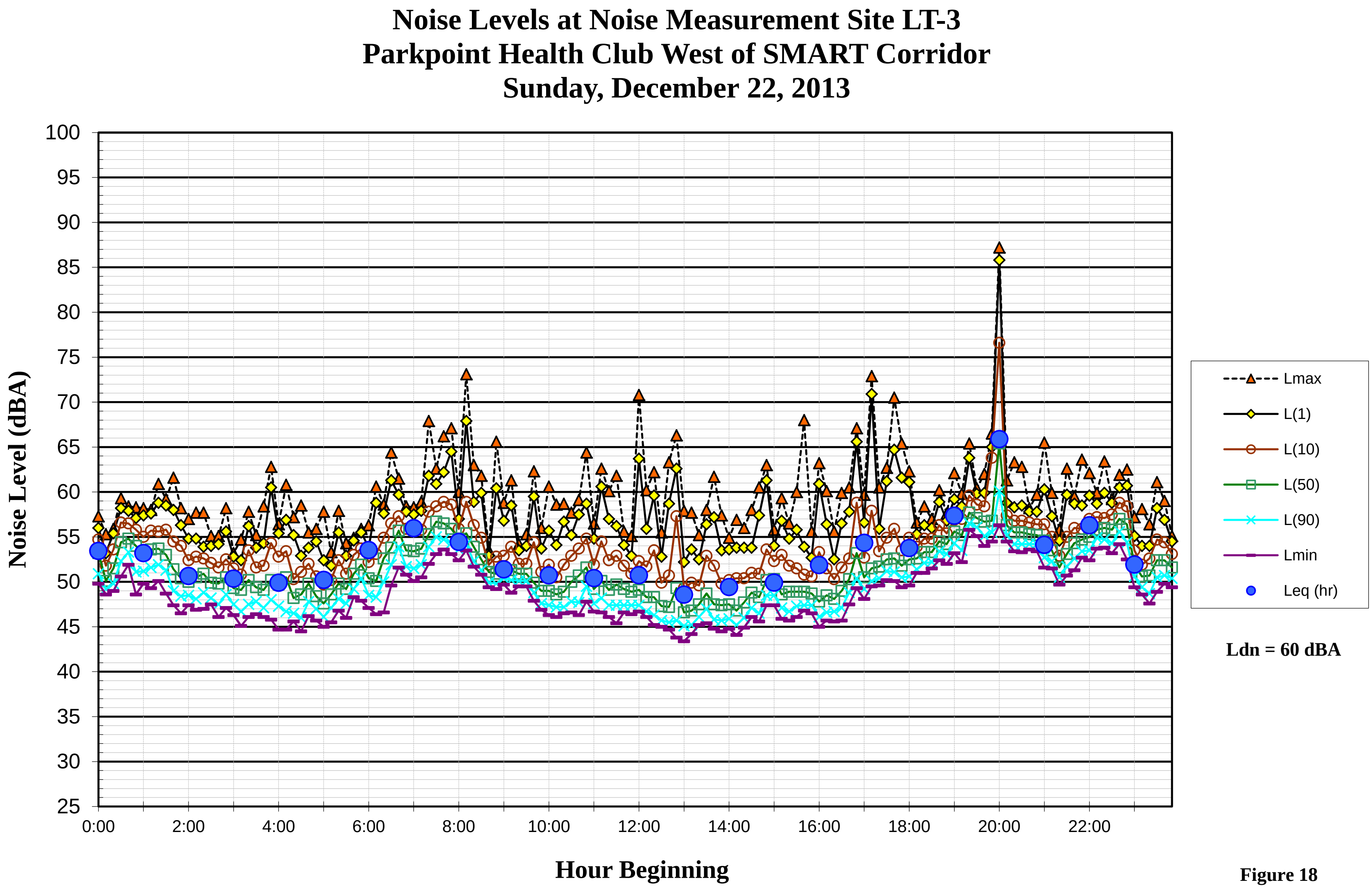
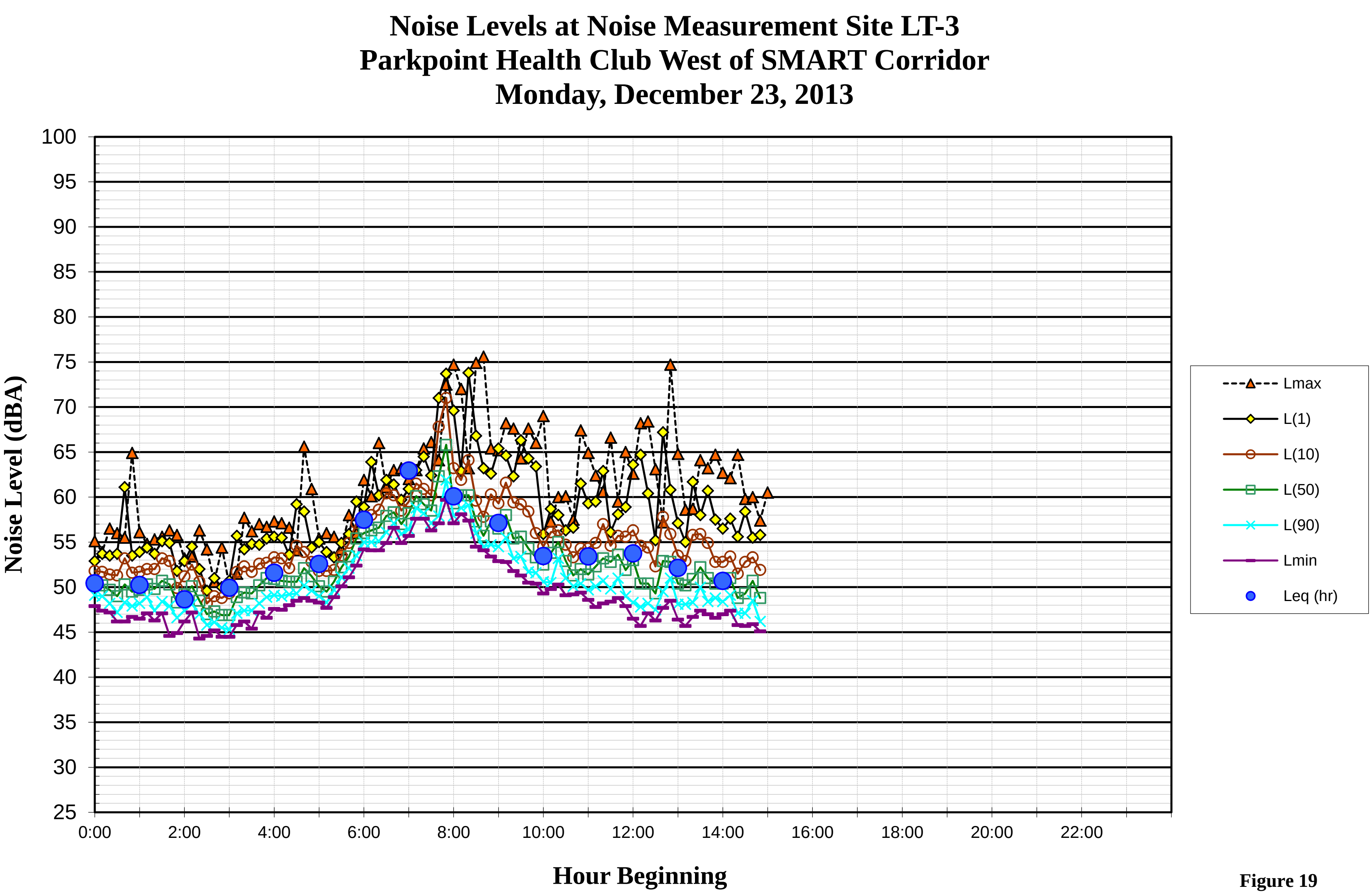

Noise Levels at Noise Measurement Site LT-3
Parkpoint Health Club West of SMART Corridor
Sunday, December 22, 2013
Noise Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
Ldn = 60 dBA

Figure 18



Noise Levels at Noise Measurement Site LT-3
Parkpoint Health Club West of SMART Corridor
Monday, December 23, 2013
Noise Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)

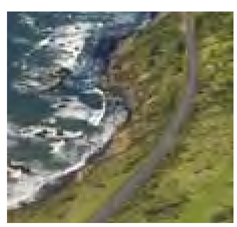
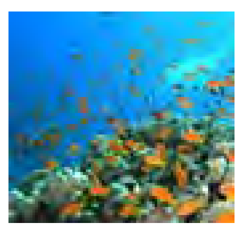
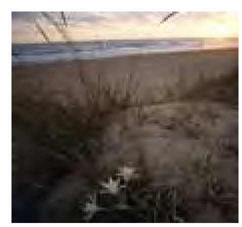
Figure 19

Appendix G

Traffic Impact Analysis Report

JENNINGS AVENUE PEDESTRIAN AND BICYCLE RAIL CROSSING PROJECT

TRAFFIC IMPACT ANALYSIS REPORT

October 2014

TRAFFIC IMPACT ANALYSIS REPORT
FOR JENNINGS AVENUE PEDESTRIAN AND BICYCLE RAIL CROSSING PROJECT

Project No. 8410868

Prepared for: City of Santa Rosa

Prepared by:

Tobin Bonnell, PE, PTOE
Project Manager

Reviewed by:

Frank Penry, PE, TE, PTOE
QA/QC

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(707) 523-1010

October 2014

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Appendix E - Existing Conditions with 8th Closure

Appendix F - Cumulative Conditions Scenario Level of Service Calculations

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Appendix H - Cumulative Conditions with 7th Closure

Appendix I - Cumulative Conditions with 8th Closure

1. Study Introduction

This report presents an analysis of the traffic and transportation impacts associated with the City of Santa Rosa's proposal to provide a California Public Utilities Commission (CPUC)-approved pedestrian and bicycle rail crossing where Jennings Avenue approaches the Sonoma-Marin Area Rail Transit (SMART) rail corridor. Two alternatives being considered are an at-grade rail crossing and a rail overcrossing at Jennings Avenue. The at-grade rail crossing is referred as the Preferred Project; the overcrossing is referred to as the Rail Overcrossing Alternative. In order to construct an at-grade rail crossing, CPUC staff has suggested that the City may be required to close one or two other rail crossings within the City, namely at West Sixth, West Seventh, or West Eighth Streets. The City has stated that, if the CPUC required the closure of more than one of these rail crossings, the at-grade rail crossing alternative would be abandoned. As such, this report, more specifically, presents an analysis of the potential traffic impacts associated with the various scenarios in which just one of the three streets mentioned above is closed to traffic, while the other two streets remain open.

The traffic study was completed in accordance with standard criteria, in coordination with City Staff, and is consistent with previous analyses and standard traffic engineering techniques. The traffic impact analysis provides an evaluation of operating conditions during weekday peak periods, including morning (AM), midday, school dismissal, and evening (PM). These peak period scenarios were analyzed under Existing, Preferred Project with Closure Option A (West Sixth Street), Preferred Project with Closure Option B (West Seventh Street), Preferred Project with Closure Option C (West Eighth Street), Cumulative, Cumulative plus Preferred Project with Closure Option A (West Sixth Street), Cumulative plus Preferred Project with Closure Option B (West Seventh Street), and Cumulative plus Preferred Project with Closure Option C (West Eighth Street). Cumulative Condition scenarios represent the traffic based on the build-out of the City of Santa Rosa General Plan, and represent an analysis horizon of the year 2035. In addition to vehicular analysis, this study provides an analysis of the project upon pedestrian and bicycle movements, as well as transit and truck routes, within the Study area.

2. Study Parameters

2.1 Prelude

The purpose of a traffic impact study is to provide City staff and policy makers such as Planning Commissioners and Council members with data that they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required in order to mitigate these impacts to a below a level of significance. Traffic impacts are typically evaluated by determining the number of trips the new use would be expected to generate, distributing the new trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to a proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections included in the study. In this case, analysis of the various closure scenarios represents an evaluation of a reallocation of existing traffic (multi-modal) throughout the existing roadway network. Therefore, these reallocated or re-distributed trips, for purposes of this study, can be thought of as "project-generated" trips.

Six (6) intersections were selected for analysis as the locations most likely to experience impacts due to re-distributed project-generated traffic. These are the intersections of West Ninth Street and North Dutton Avenue, West Eighth Street and North Dutton Avenue, West Ninth Street and Wilson Street, West Eighth Street and Wilson Street, West Seventh Street and Wilson Street, and West Sixth Street and Wilson Street. Presently all of the study intersections are operating acceptably at LOS C or better during the Existing Condition peak periods. While dispersal of traffic onto surrounding side streets could increase traffic on roadways not analyzed with this study, this effect would be considered to be negligible when compared to the corridors of North Dutton Avenue, West Ninth Street, and Wilson Street, where existing conflicting traffic volumes are considerably greater than along side streets. To confirm the approach to study intersection selection, adjacent intersections along West Sixth and West Seventh Streets (at Adams Street) were observed during the PM peak period and traffic volumes were found to be just 25 percent of the study intersection volume. Along West Ninth Street, the intersection at Donahue Street had 50 percent of the volume observed during the PM peak hour at West Ninth Street and Wilson Street,

2.2 Study Periods

The potential traffic and circulation impacts were analyzed during the weekday morning (AM), midday, school dismissal, and evening (PM) peak hours. The weekday a.m. peak hour is defined as the hour with the highest traffic volume within the AM peak period (7:00 to 9:00 a.m.). The weekday midday peak hour is defined as the hour with the highest traffic volume within the midday peak period (11:00 a.m. to 1:00 p.m.). The weekday school dismissal peak hour is defined as the hour with the highest traffic volume within the school dismissal peak period (1:30 p.m. to 3:30 p.m.). The weekday PM peak hour is defined as the hour with the highest traffic volume within the PM peak period (4:00 to 6:00 p.m.). These periods were chosen in order to demonstrate a comprehensive analysis of the Study area and to quantitatively prove when the most conservative data set available typically occurs within the limits of the Study Area.

Intersection turning movement counts, pedestrian counts, and bicycle counts are provided with Appendix A.

2.3 Study Scenarios

The Preferred Project being proposed by the City is to provide a CPUC-approved at-grade crossing at Jennings Avenue. As stated, the CPUC could require that, with the implementation of this crossing, one of the existing rail crossings at West Sixth, West Seventh, or West Eighth Streets would need to be closed at the SMART rail corridor.

The City is also considering an alternative to provide a CPUC-approved overcrossing at Jennings Avenue. The implementation of this alternative would not require any closures of SMART rail crossings.

The No Project Alternative would eliminate the existing unofficial pedestrian and bicycle rail crossing at Jennings Avenue. The implementation of this alternative would not require any closures of SMART rail crossings at West Sixth, West Seventh, or West Eighth Street.

2.4 Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. The LOS designation for intersections is generally accompanied by a unit of measure which indicates a level of delay.

2.4.1 Intersection Level of Service Methodologies

The study intersections were analyzed using methodologies from the *Highway Capacity Manual 2000*[i]. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

2.4.2 Signalized Intersections

The signalized methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. The ranges of delay associated with the various signalized levels of service are indicated in Table 1.

2.4.3 Unsignalized Intersections

The Levels of Service for the intersections with all-way or side street stop controls, those which are "unsignalized," were analyzed using the unsignalized intersection capacity method. For side street stop controls the method determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. The movement with the highest level of delay is presented as the Worst Case Level of Service. The through movements on the main street are assumed to operate

at free flow and a Level of Service A. The ranges of delay associated with the various unsignalized levels of service are indicated in Table 2.

Table 1 Signalized Level of Service

Level of Service	Description	Average Control Delay (Seconds Per Vehicle)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	< 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and/or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.1 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to oversaturation, poor progression, or very long cycle lengths.	> 80.0

Source: 2000 Highway Capacity Manual (Transportation Research Board, 2000).

Table 2 Unsignalized Level of Service

Level of Service	Description	Average Control Delay (Seconds Per Vehicle)
A	Little or no delay	< 10.0
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays with intersection capacity exceeded (for an all-way stop), or with approach/turn movement capacity exceeded (for a side street stop controlled intersection)	> 50.0

Source: 2000 Highway Capacity Manual (Transportation Research Board, 2000).

2.5 Regulatory Framework

As noted in the *City of Santa Rosa General Plan*, the City's expectation for all major corridors is to maintain a level of service LOS D or better. However, it is important to note that the *General Plan* further states exceptions to the LOS standard, including those intersections and corridors within the downtown area of the City. The intersections within downtown are not held to a LOS standard. The downtown area, as defined by the *General Plan*, includes the intersections of West Sixth, West Seventh, West Eighth, and West Ninth Streets with Wilson Street. The *General Plan* additionally states that the City expects to minimize traffic in residential neighborhoods and avoid excessive traffic volumes greater than that dictated by street design and classification. The City also emphasizes a desire to maintain all roadways and bicycle-related facilities so that safe and comfortable conditions are maintained for cyclists and pedestrians. While the City of Santa Rosa has not adopted thresholds of significance for pedestrian or bicycle impacts, for this analysis significance of impacts to both pedestrian and cyclist re-routing is developed from Safe Routes to School programs. This convention uses 0.5 miles, or approximately 15 minutes of walking time, as the threshold at which a grade school-related trip switches to use a motor vehicle.

Bicycle facilities are classified into three categories:

- Class I (Multi-Use Trails) – A Class I facility is a multi-use trail for the exclusive use of bicycles and pedestrians, separate from the auto traveled way.
- Class II (Bike Lanes) – A Class II facility is an on-street bicycle lane, with painted markings and signs designating the lane's bicycle-only use. The bicycle lane is separated from vehicle and pedestrian traffic, but the route may be interrupted by vehicle turning movements at intersections.
- Class III (Bike Routes) – A Class III bicycle facility is a route for bicyclists in which the available traveled way is shared with vehicles. The facility is designated by signs or other markings and is usually provided when a Class I or Class II facility cannot be provided.

2.5.1 City of Santa Rosa General Plan Goals and Policies

The following are the goals and policies from the *Santa Rosa General Plan 2035* that are applicable to the Project.

T-D Maintain acceptable motor vehicle traffic flows.

T-D-1 Maintain a Level of Service (LOS) D or better along all major corridors. Exceptions to meeting the standard include:

- Within downtown;
- Where attainment would result in significant environmental degradation;
- Where topography or environmental impact makes the improvement impossible; or
- Where attainment would ensure loss of an area's unique character.

The LOS is to be calculated using the average traffic demand over the highest 60-minute period.

T-D-2 Monitor LOS at intersections to assure that improvements or alterations to improve corridor LOS do not cause severe impacts at any single intersection.

T-D-3 Require traffic studies for development projects that may have a substantial impact on the circulation system.

T-H Expand the existing transit network to reduce greenhouse gas emissions and to provide convenient and efficient public transportation to workplaces, shopping, SMART stations, and other destinations.

T-H-1 Provide convenient, efficient routes to major employment centers throughout the city.

T-J Provide attractive and safe streets for pedestrians and bicyclists.

T-J-1 Pursue implementation of walking and bicycling facilities as envisioned in the city's Bicycle and Pedestrian Master Plan.

T-J-5 Support Safe Routes to School by pursuing available grants for this program and ensuring that approaches to schools are safe for cyclists and pedestrians by providing needed amenities such as sidewalks, crosswalks, bike lanes, and traffic calming on streets near schools.

T-K Develop a safe, convenient, and continuous network of pedestrian sidewalks and pathways that link neighborhoods with schools, parks, shopping areas, and employment centers.

T-K-1 Link the various citywide pedestrian paths, including street sidewalks, downtown walkways, pedestrian areas in shopping centers and work complexes, park pathways, and other creekside and open space pathways.

T-K-5 Ensure provision of safe pedestrian access for students of new and existing school sites throughout the city.

T-K-6 Integrate multi-use paths into all creek corridors, railroad rights-of-way, and park designs.

T-L Develop a citywide system of designated bikeways that serves both experienced and casual bicyclists, and which maximizes bicycle use for commuting, recreation, and local transport.

T-L-1 Provide bicycle lanes along all regional/arterial streets and high volume transitional/collector streets.

T-L-2 Provide bicycle lanes on major access routes to all schools and parks.

T-L-3 Improve bicycle networks by finishing incomplete or disconnected bicycle routes.

T-L-4 Maintain all roadways and bicycle-related facilities so they provide safe and comfortable conditions for bicyclists.

T-L-5 Consider bicycle operating characteristics and safety needs in the design for roadways, intersections, and traffic control systems.

T-L-6 Promote and facilitate the use of bicycles with other transportation modes.

In addition, the General Plan shows West Sixth Street as a future Class II bicycle route.

2.5.2 North Santa Rosa Station Area Specific Plan Goals and Policies

The following are the goals and policies from the *North Santa Rosa Station Area Specific Plan* that are applicable to the Project.

C-3 Provide multimodal connections throughout the Project Area.

C-3.4 Establish Jennings Avenue as a bike boulevard by constructing the necessary improvements to minimize stops, including signs and markings to identify it as a shared roadway with bicycles and vehicles, and by enhancing crossing amenities where appropriate.

C-5 Complete specific roadway improvements in the Project Area to enhance safety and comfort for pedestrians and bicyclists.

C-5.6 Implement a bicycle boulevard along the length of Jennings Avenue by minimizing the number of stops required of bicyclists traveling along the corridor while also maintaining low vehicular speeds.

C-5.8 Establish a pedestrian/bicycle crossing of the SMART rail corridor to link the eastern and western segments of Jennings Avenue.

C-7 Establish a network of multiuse paths for pedestrians and bicyclists throughout the Project Area.

C-7.2 Establish connections between linear multi-use paths along creeks and the overall pedestrian/bicycle network.

2.5.3 Downtown Santa Rosa Station Area Specific Plan Goals and Policies.

The following are the goals and policies from the *Downtown Santa Rosa Station Area Specific Plan* that are applicable to the Project.

SP-T-1 Ensure new development provides adequate vehicular circulation improvements.

SP-T-1.3 Discourage “cut-through” traffic in the West End neighborhood by restricting turning movements onto West Sixth Street from the SMART property to right turns only.

SP-T-2 Promote a user-friendly interface between all transit agencies serving the Plan Area.

SP-T-2.2 Work with SMART and major employers to establish shuttle service between the commuter rail station site and area employment centers and business parks.

SP-T-3 Ensure new development and streetscape projects provide pedestrian and bicycle circulation improvements.

SP-T-3.1 Coordinate with SMART to implement the regional pedestrian/bicycle trail along the rail right-of-way.

SP-T-3.4 Within the Specific Plan Area, give priority to pedestrian and bicycle improvements in the Railroad Square and Railroad Corridor Sub-Areas to promote use of these travel modes by those living or working in closest proximity to the station site.

SP-T-3.5 Work with SMART and the Public Utilities Commission to develop attractive fencing and landscaping treatments along the railroad right-of-way. Low-level open fencing should be encouraged.

In addition, the Downtown Station Area Specific Plan shows West Sixth Street as a future Class II bicycle route.

2.5.4 Santa Rosa Bicycle and Pedestrian Master Plan 2010 Goals and Policies.

The following are the goals and policies from the *Santa Rosa Bicycle and Pedestrian Master Plan* that are applicable to the Project.

1 Integrate the consideration of bicycle and pedestrian travel into City planning activities and capital improvement projects, and coordinate with other agencies to improve pedestrian and bicycle facilities and access within and connecting to Santa Rosa.

1.2 Integrate pedestrian and bicycle network and facility needs as appropriate into all planning, and regulatory documents, street capital improvement projects, including traffic impact studies and analyses of proposed street changes.

2 Develop a safe, convenient, and continuous network of pedestrian and bicycle facilities that serves the community and links neighborhoods with schools, parks, shopping, and employment centers.

2.1 Develop a citywide system of designated bikeways that serve bicyclists of all skill levels and which maximizes bicycle use for commuting, local transportation, and recreation.

2.3 Provide sidewalks or pathways and bikeways on major access routes to all schools and parks.

2.6 Ensure that pedestrian and bicycle circulation is an integral part of street design so that lanes and pathways form an integrated network and address the “Complete Streets” concept in transportation planning.

2.7 Consider pedestrian and bicycle operating characteristics in the design, and/or retrofitting of turning movements, intersections and traffic control systems, including analysis of pedestrian and bicycle counts and collisions.

In addition, the Bicycle and Pedestrian Master Plan 2010 shows West Sixth Street as a future bicycle boulevard.

2.6 CEQA Appendix G Evaluation Criteria

The California Environmental Quality Act (CEQA) includes provisions for significance criteria related to traffic and circulation impacts. In accordance with Appendix G of the CEQA Guidelines, the Project could have a significant environmental impact if it were to:

a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, which results in substantial safety risks;

d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

e. Result in inadequate emergency access;

f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

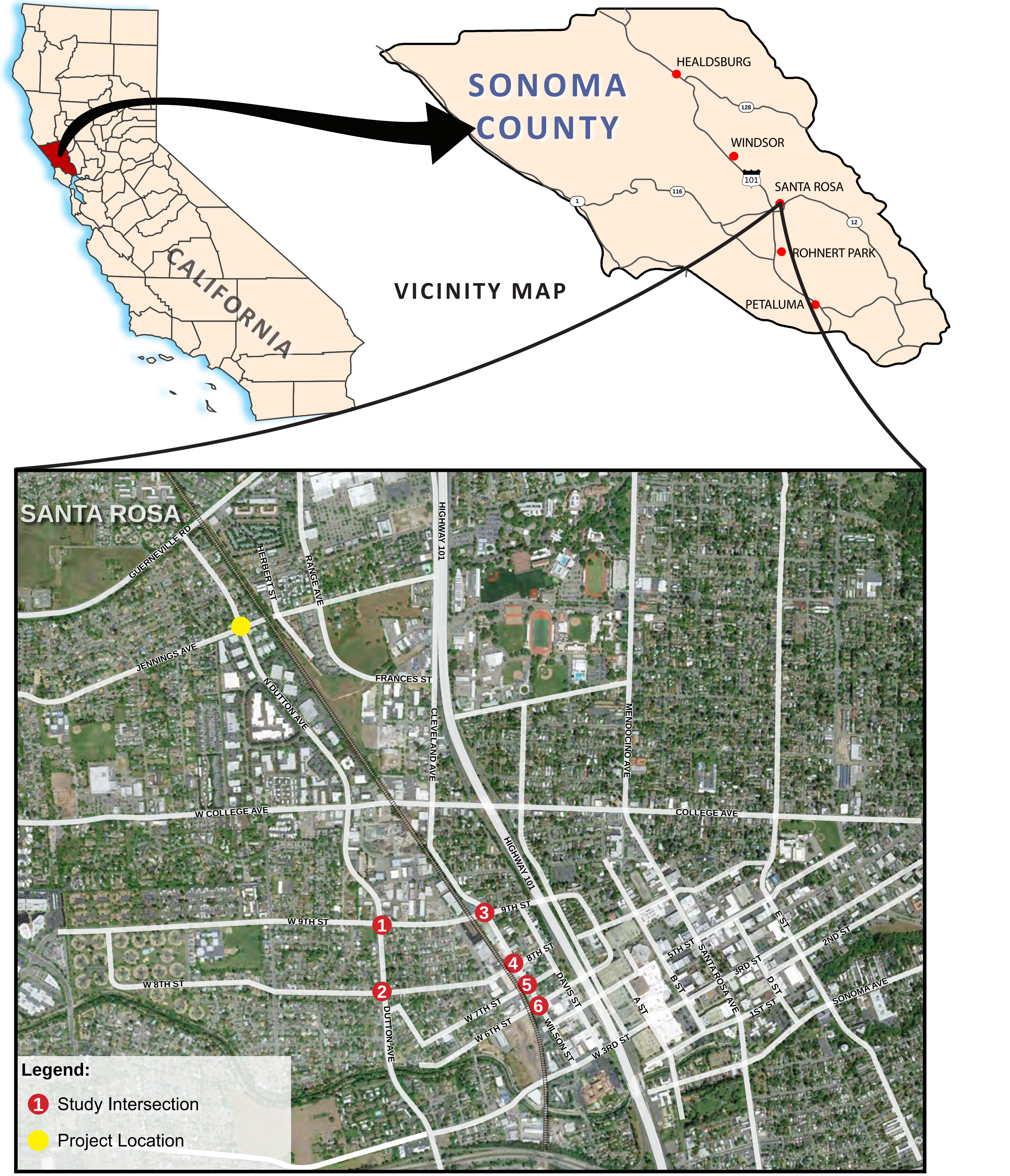
3. Existing Conditions

3.1 Study Area

The portion of Jennings Avenue being considered for the CPUC-approved rail crossing runs roughly perpendicular to the existing SMART rail corridor. Within this area, this portion of roadway, with one lane in each direction, is a local road serving mainly residential land uses. Jennings Avenue currently terminates on both sides of the corridor, with guardrail further restricting vehicular access. To the east of the SMART rail corridor, parking is prohibited along the south side of Jennings Avenue. To the west of the SMART rail corridor, parking is permitted on the street in both directions. The closest cross streets intersecting Jennings Avenue are Herbert Street to the east and North Dutton Avenue to the west. The intersection of Herbert Street and Jennings Avenue is currently unsignallized, with no regulated stop control. Herbert Street is a local road serving residential land uses exclusively, with one lane in each direction. The intersection of North Dutton Avenue and Jennings Avenue is currently unsignalized with stop control on both approaches of Jennings Avenue, in the east-west direction. North Dutton Avenue features two lanes in each direction, with a shared left turn lane and Class II bike lanes on both approaches. The south approach of North Dutton Avenue currently has a marked crosswalk across the intersection. More discussion regarding the existing pedestrian facilities currently found within this area is provided within “Section 3.5 – Non-Motorized Transportation – Existing” of this report.

In addition to the area surrounding the existing crossing at Jennings Avenue, the Study area consists of the corridors along West Sixth Street, West Seventh Street, and West Eighth Street, Wilson Street, and West Ninth Street. The Wilson Street corridor runs parallel to the SMART rail corridor and includes unsignalized intersections with West Sixth Street, West Seventh Street, and West Eighth Street. Wilson Street, West Sixth Street, West Seventh Street, and West Eighth Street are all two-way streets with one lane in each direction and sidewalk facilities. While Wilson Street meets West Seventh Street and West Eighth Street at unsignalized intersections with stop control only in the east-west direction, the intersection of West Sixth Street and Wilson Street is unsignalized with four-way stop control. The West Ninth Street corridor crosses the SMART rail corridor, shares an unsignalized, four-way stop intersection with Wilson Street. West Ninth Street is a two-way street with one lane in each direction, and includes a center turn lane, bike lanes in both directions, and sidewalk facilities. The North Dutton Avenue corridor runs roughly parallel to the SMART rail corridor and shares a signalized intersection with West Ninth Street, as well as an unsignalized intersection with West Eighth Street. North Dutton Avenue is a two-way street with two lanes in both directions, a center turn lane, and sidewalk facilities.

The study area is shown in Figure 1. Figure 2 shows the area of Jennings Avenue being considered for the CPUC-approved rail crossing. The locations of the closure options at the rail crossings are shown in Figure 2A. The unofficial crossing that currently exists across the SMART rail corridor is located between the at-grade crossings at West College Avenue and at Guerneville Road. The distance between these roadways is approximately 0.85 miles; it is 0.3 miles from Guerneville Road to Jennings Avenue and 0.55 miles from West College Avenue to Jennings Avenue.



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GHD

City of Santa Rosa

City of Santa Rosa
Jennings Avenue Crossing
Traffic Impact Analysis Report

Job Number	8410868
Revision	
Date	Jun 2014

Project Vicinity & Location Map

Figure 1

2235 Mercury Way Suite 150 Santa Rosa California 95407 USA T 1 707 523 1010 F 1 707 527 8679 W www.ghd.com

The Jennings Avenue crossing provides access to residential, school (Helen M. Lehman Elementary), and retail (Coddingtown Mall). Residences, including the recently developed Arroyo Point apartment complex to the east, exist on both sides of the crossing. Helen M. Lehman Elementary School is approximately a half mile west of the existing SMART rail corridor, at the intersection of Jennings Avenue and Dudley Place. A map produced for a Safe Routes To School study for Helen Lehman School in 2011 indicates that approximately 75 students lived on the east side of the SMART rail corridor in the vicinity of the crossing at Jennings Avenue. Coddingtown Mall development is east of the SMART rail corridor, south of Guerneville Road, and between Range Avenue and U.S. Route 101. In addition to serving retail uses related to typical mall developments, this site also serves grocery and restaurant land uses.

3.2 Study Intersections

The following intersections were selected for analysis as the locations most likely to experience impacts due to the project-generated traffic. The intersections and study area context map are provided in Figure 1.

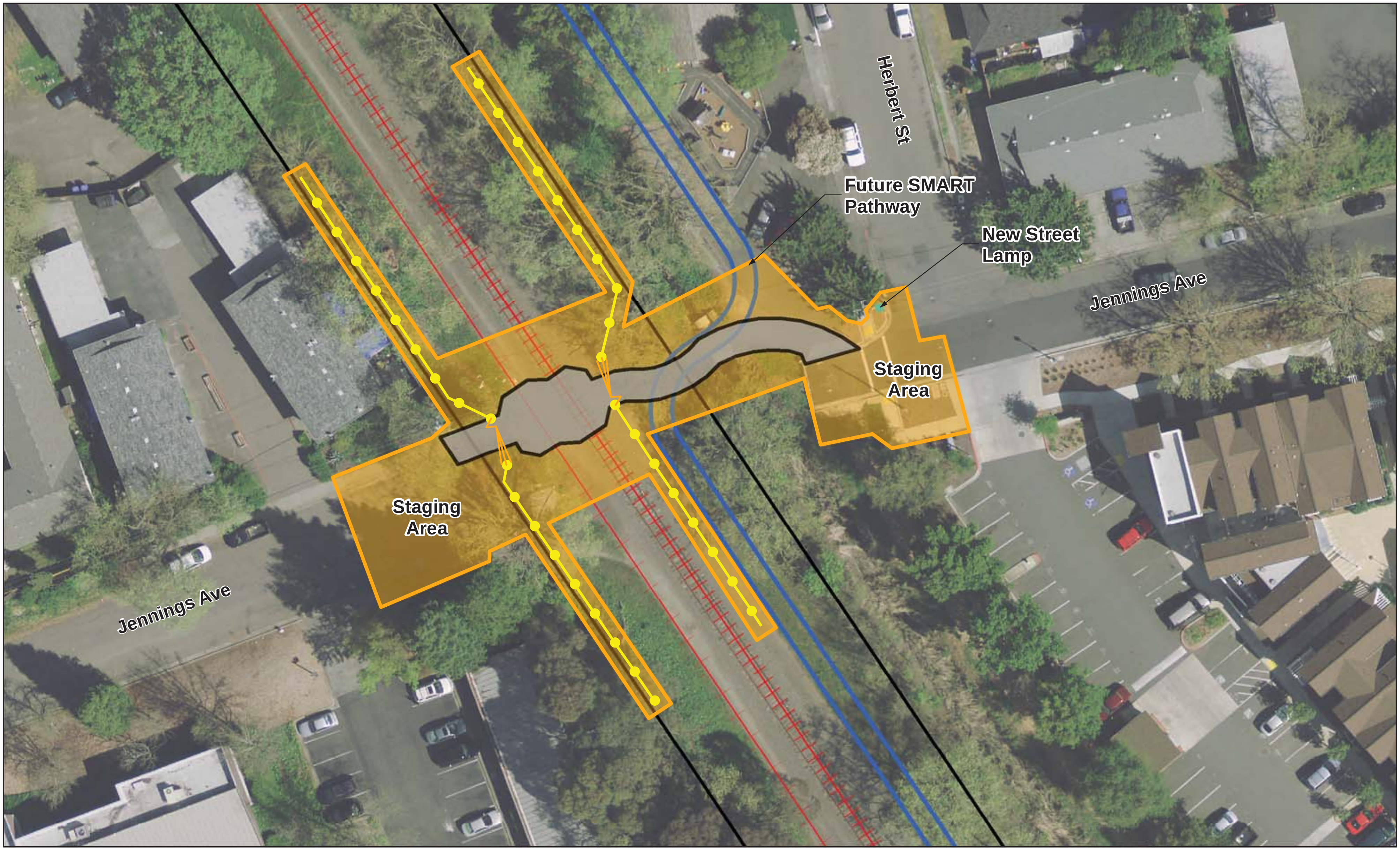
1. West Ninth Street/North Dutton Avenue
2. West Eighth Street/North Dutton Avenue
3. West Ninth Street/Wilson Street
4. West Eighth Street/Wilson Street
5. West Seventh Street/Wilson Street
6. West Sixth Street/Wilson Street

Existing intersection geometrics are shown on Figure 3.

3.3 Existing Traffic Volumes

As noted previously in the *Study Parameters - Study Periods* section, vehicular turning movement counts were performed during each of the specified peak periods. To determine the peak hour within each peak period, turning movement vehicle counts were performed in the field at each of the study area intersections. Heavy vehicle percentages used for traffic analysis in this study are unique to each movement, and based on identification of vehicle classification with field-collected data during each peak hour. Existing traffic volumes in the noted peak hours are indicated in Figure 4.

In addition to the vehicular turning movement counts, pedestrian and bicycle counts were also field collected at the intersections of Wilson Street with West Sixth, West Seventh, and West Eighth Street, as well as at the existing SMART rail crossing at Jennings Avenue. Pedestrian and bicycle counts were performed at these four locations during the peak traffic periods, noting the type of pedestrian trips being taken, including grade school related trips, secondary school/college related trips, recreational related trips, and commuter related trips. Counts were performed on October 10, 2013, during a typical weekday when school was in session. It is important to note that the previous crossing usage may have been higher prior to the recent SMART rail track improvements, because the improved tracks are harder to negotiate for pedestrians and bicycles and, upon the implementation of these improvements, SMART rail conveyed to local schools that children should be told not to use the crossing. Discussion and tabulation



Paper Size ANSI A

0 25 50

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

N

LEGEND

- Fencing
- Conceptual Rail Crossing and Path
- Signal Arm
- Construction Area Boundary
- New Street Lamp
- Future SMART Pathway
- SMART Rail Corridor
- Main Track
- Siding Track

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City of Santa Rosa

Job Number 8410868
Revision 0
Date 13 Aug 2014

Preferred Project - At-grade Rail Crossing - Conceptual Design

Figure 2

\\ghdnet\ghd\US\Santa Rosa\Projects\02057 - City of Santa Rosa\02057-8410868 Jennings Ave Crossing EIR\08-GIS\Maps\Figures\PD\Preferred Project Rail Crossing.mxd

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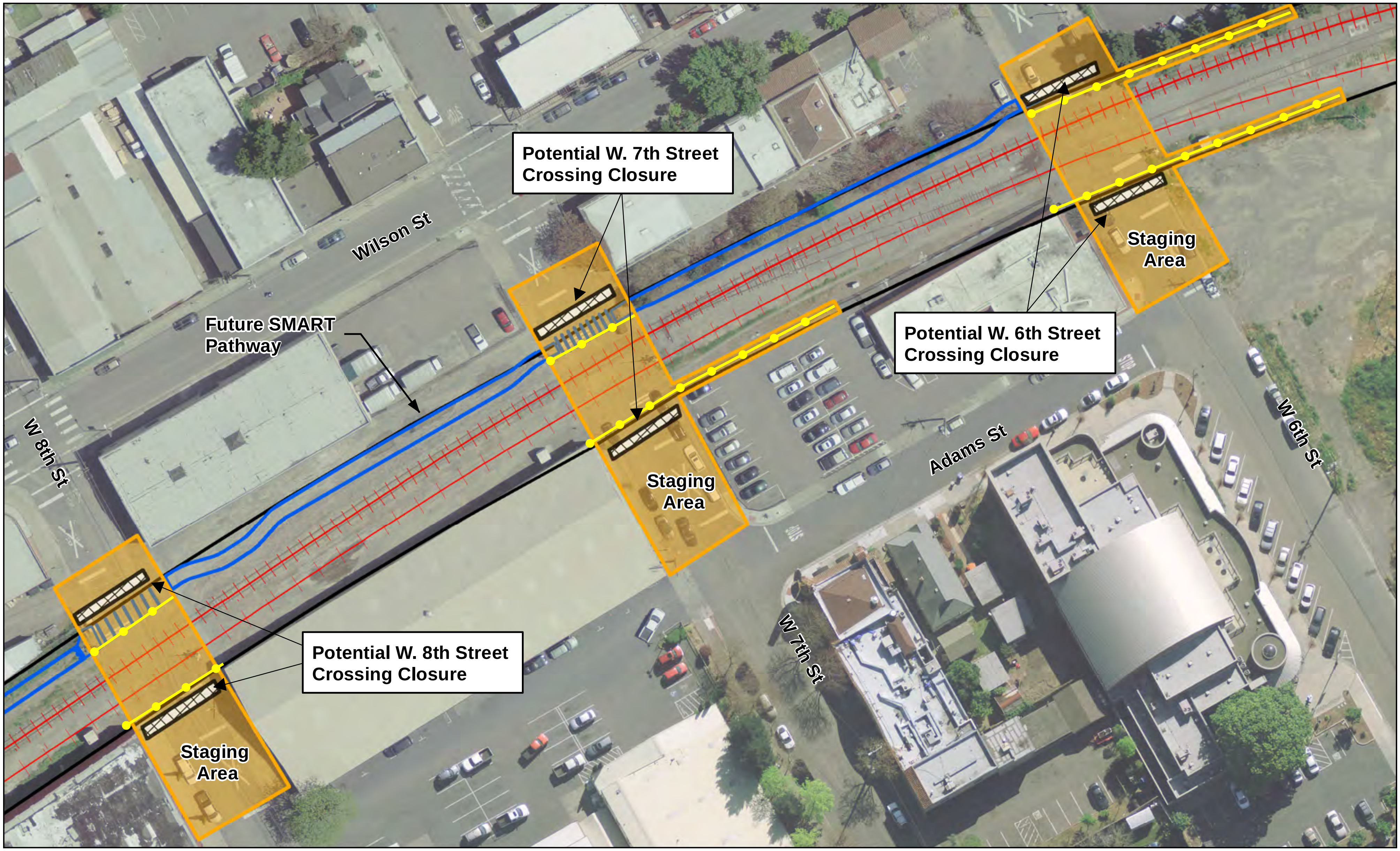
Data source: GHD 2013. Created by:rmremillard



Paper Size ANSI A

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

N

LEGEND

- Traffic Barricade
- SMART Rail Corridor
- Future SMART Pathway
- Fencing
- Construction Area Boundary
- Siding Track
- Main Track

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City of Santa Rosa

City of Santa Rosa
Jennings Avenue Pedestrian and Bicycle Rail Crossing EIR

Job Number 8410868
Revision 1
Date 10 Oct 2014

Preferred Project - At-grade Rail Crossing
Alternative Locations for Closure of One Crossing

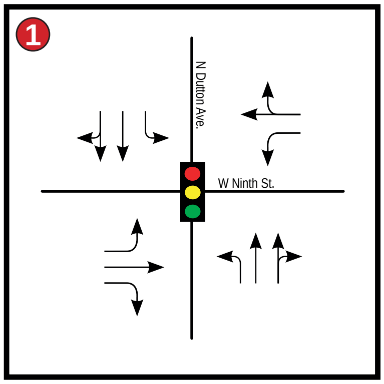
Figure 2A

\\ghdnet\ghd\US\Santa Rosa\Projects\02057 - City of Santa Rosa\02057-8410868 Jennings Ave Crossing EIR\08-GIS\Maps\Figures\PD\Preferred Project Rail Alt Closures.mxd

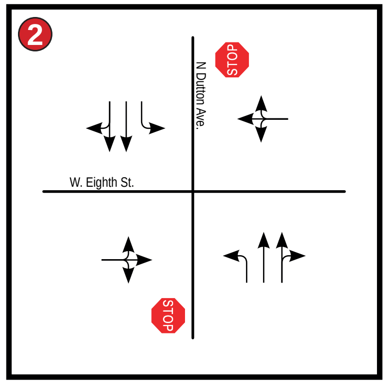
2235 Mercury Way Santa Rosa, CA 95407 T 707-523-1010 F 707-527-8679 W www.ghd.com

Data source: GHD 2013. Created by:kross

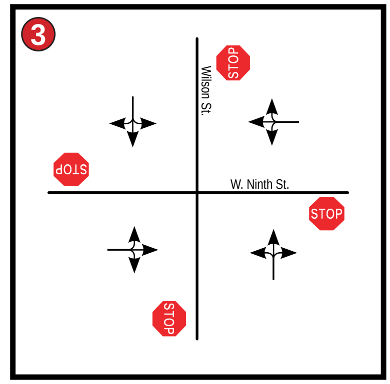
West Ninth St./
North Dutton Ave.



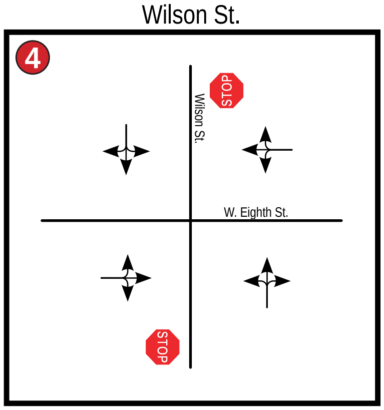
West Eighth St./
North Dutton Ave.



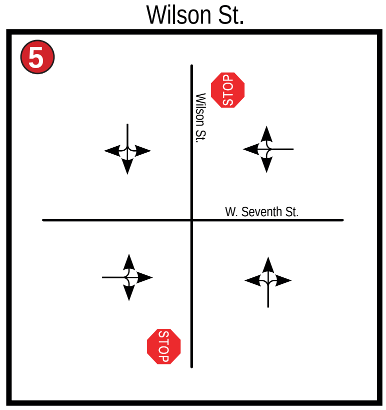
West Ninth St./
Wilson St.



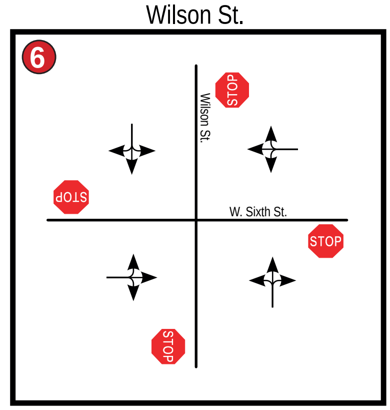
West Eighth St./
Wilson St.



West Seventh St./
Wilson St.



West Sixth St./
Wilson St.



Legend:

1 Study Intersection

Signalized Intersection

STOP Stop Sign

City of Santa Rosa
Jennings Avenue Crossing
Traffic Impact Analysis Report

Intersection Lane Geometry
& Traffic Controls

Job Number	8410868
Revision	
Date	Jul 2014

Figure 3

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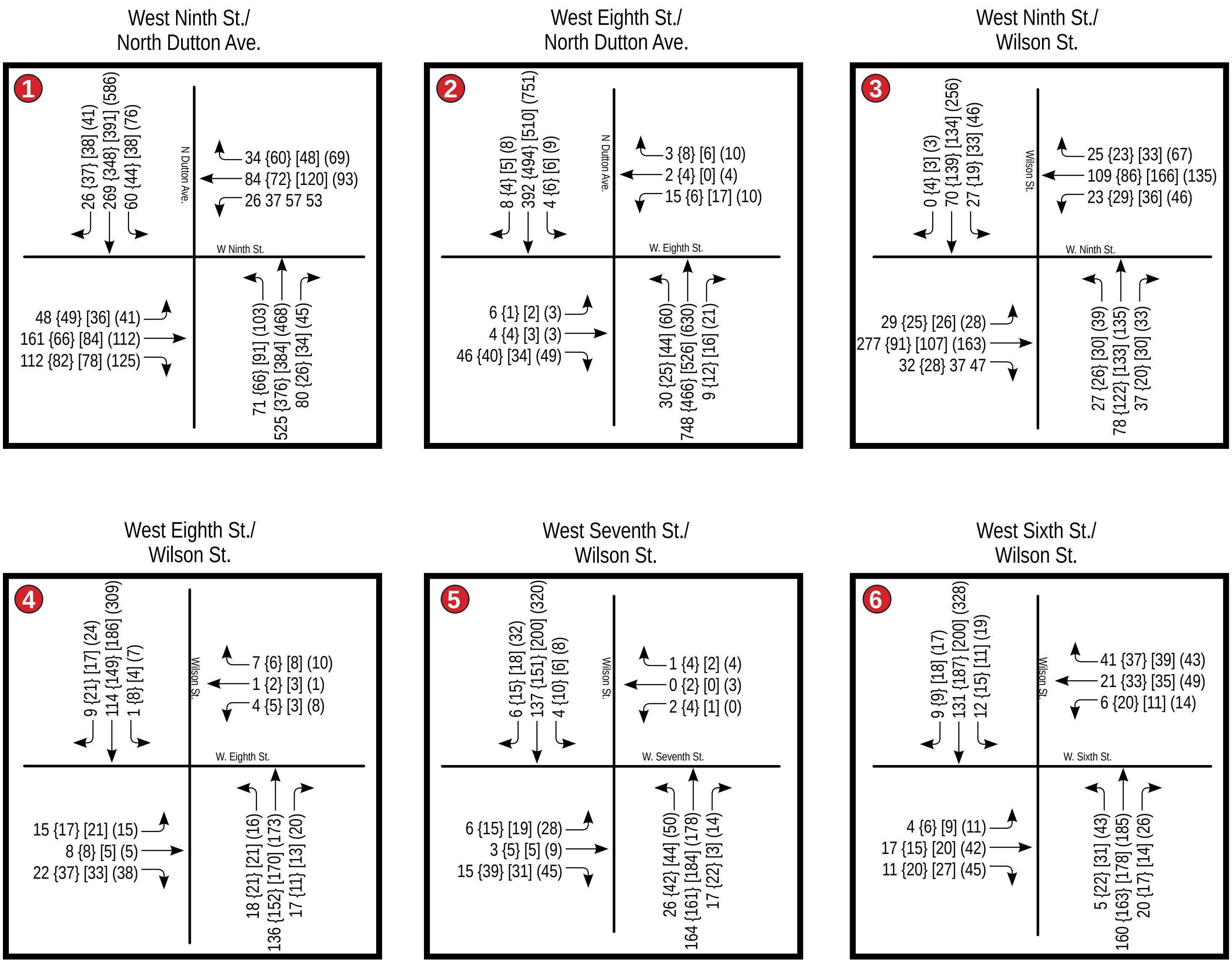
of the existing pedestrian and bicycle traffic patterns at these four locations is included in the "Non-Motorized Transportation – Existing" section of this report.

3.4 Study Intersections Existing Level of Service

Based on the analysis of existing traffic volumes, all of the critical movements of the Study area intersections are operating acceptably at LOS C or better during all of the analyzed peak periods. The Existing Conditions Scenario Level of Service calculations are summarized in Table 3, and full results are provided in Appendix B.



Legend:

1 Study Intersection

xxx Weekday AM Peak Hour Volume

{xxx} Weekday Midday Peak Hour Volume

[xxx] Weekday School Dismissal Peak Hour Volume

(xxx) Weekday PM Peak Hour Volume

Table 3 Summary of Existing Peak Hour Intersection Level of Service Calculations

Intersection	Existing Conditions			
	AM Peak	Midday Peak	School Dismissal Peak	PM Peak
	Delay/LOS	Delay/LOS	Delay/LOS	Delay/LOS
1. West Ninth Street/North Dutton Avenue	9.9/A	8.8/A	9.5/A	9.4/A
2. West Eighth Street/North Dutton Avenue				
Eastbound Approach	*11.0/B*	*10.8/B*	*11.1/B*	*12.7/B*
Westbound Approach	*17.5/C*	*12.6/B*	*14.8/B*	*16.4/C*
Northbound Left-turn	8.3/A	8.8/A	8.7/A	9.8/A
Southbound Left-turn	9.4/A	8.4/A	8.6/A	9.8/A
3. West Ninth Street/Wilson Street	10.4/B	9.5/A	11.0/B	14.6/B
4. West Eighth Street/Wilson Street				
Eastbound Approach	*10.7/B*	*10.8/B*	*11.3/B*	*12.3/B*
Westbound Approach	*10.0/B*	*11.0/B*	*10.8/B*	*12.2/B*
Northbound Left-turn	0.9/A	1.0/A	1.0/A	0.8/A
Southbound Left-turn	0.1/A	0.4/A	0.2/A	0.2/A
5. West Seventh Street/Wilson Street				
Eastbound Approach	*10.3/B*	*10.8/B*	*11.9/B*	*14.4/B*
Westbound Approach	*11.0/B*	*11.7/B*	*10.9/B*	*12.0/B*
Northbound Left-turn	1.1/A	1.7/A	1.7/A	2.0/A
Southbound Left-turn	0.2/A	0.5/A	0.2/A	0.2/A
6. West Sixth Street/Wilson Street	8.5/A	9.1/A	9.5/A	11.9/B

Notes: *Italics* = results for minor movements at unsignalized intersections
Bold = results exceed acceptable level of service
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

3.5 Non-Motorized Transportation - Existing

3.5.1 Pedestrian Facilities

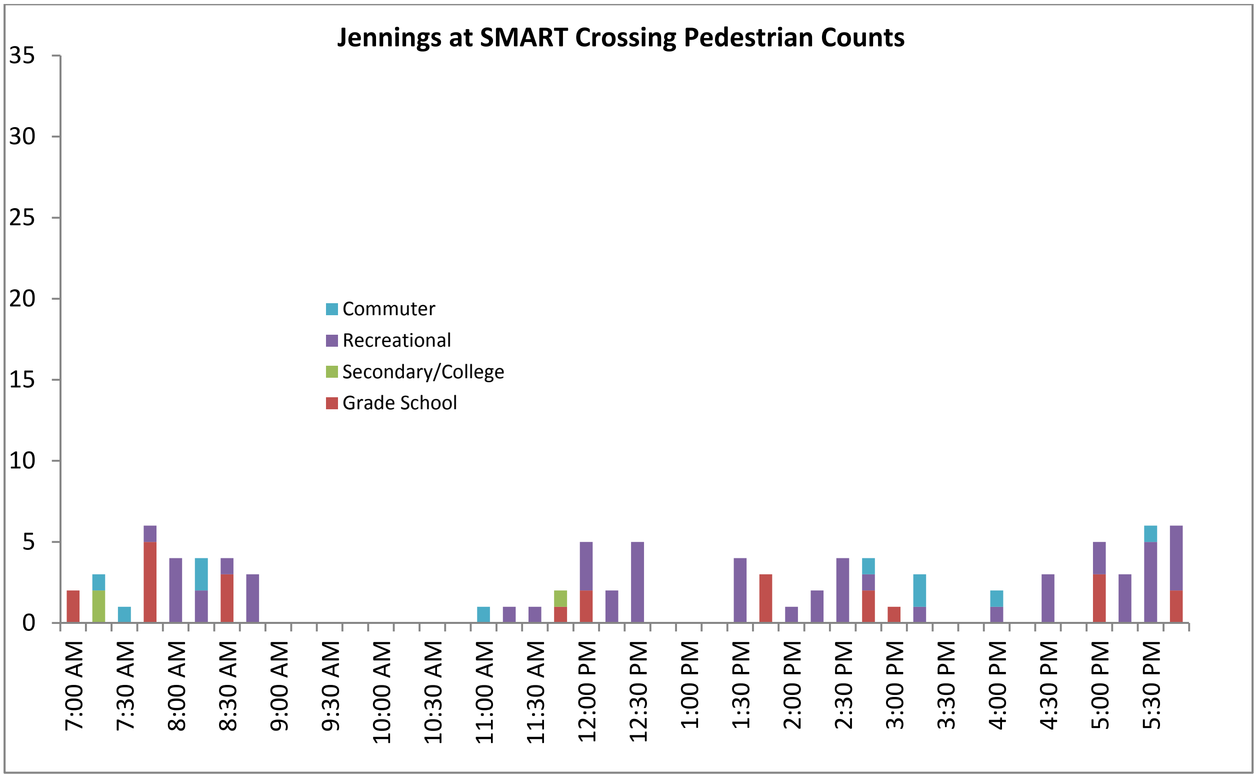
As this study explores the issues with upgrading the existing unofficial crossing at Jennings Avenue across the SMART rail corridor, as it pertains to pedestrians and bicycles, it is important to note the existing condition of pedestrian facilities within this area of Jennings Avenue. To the west of the SMART rail corridor, Jennings Avenue does not feature a continuous sidewalk on either side of the roadway, although some sidewalk in fair condition is present on the north side. The sidewalk pavement on the north side currently dead ends at the edge of the SMART rail corridor. No sidewalk exists on the east side of North Dutton Avenue south of Jennings Avenue.

The existing portion of the SMART rail corridor within this area does not currently deviate from the typical rail cross section to provide for an ADA-compliant pedestrian crossing. So, pedestrians must currently traverse the track ballast, rails, and railroad ties in order to cross the corridor. To the east of the SMART rail, a gravel and dirt pathway allows potential pedestrians to cross over an existing culvert to reach an asphalt pathway that parallels the SMART rail corridor in the northbound direction. This pathway connects to the roadway portion of Jennings Avenue just to the south. This portion of Jennings Avenue to the east of the SMART rail corridor, near its intersection with Herbert Street, features newly-built sidewalk, a marked crosswalk across the west approach of Jennings Avenue, and what appear to be ADA-compliant curb ramps. The sidewalk connects to newly-built sidewalk associated with the Arroyo Point Apartments development and the Range Ranch Apartments east of Range Avenue. While the Arroyo Point Apartments development also provides for new street lighting to the east of the SMART rail corridor, the area of Jennings Avenue to the west does not currently provide any street lighting. These pedestrian facilities to the east of the SMART rail corridor, if the roadway portion of Jennings Avenue is utilized as a pathway, are accessible from the terminal point of the unofficial pedestrian crossing.

Wilson Street, West Sixth Street, West Seventh Street, and West Eighth Street have continuous sidewalks on both sides of the roadway throughout the study area corridor, ranging from 5 to 8 feet wide. Although these portions of sidewalk appear to be of fairly old construction, most all of these sidewalk corridors are in good condition, without considerable cracks or settlement. At the intersections of these four corridors, curb ramps and marked crosswalks are present for all legs of the intersections. The curb ramps at these intersections appear to not currently comply with ADA standards; however, ADA compliance was not positively verified as a part of this study. The corridors of West Sixth Street, West Seventh Street, and West Eighth Street, as they exist west of the SMART rail corridor, have some intersections with residential cross streets that feature curb ramps that appear to be non-compliant with ADA standards, and are without marked crosswalks. West Ninth Street has continuous sidewalk on both sides of the roadway throughout the study area corridor, which, in most sections, is approximately 4 feet wide. Within the western portion of the corridor, the sidewalks on both sides of the roadway widen out to approximately 6 feet. The large majority of the sidewalk within this corridor is currently in good condition. At the intersection of West Ninth Street and Wilson Street, curb ramps are present on all four corners and marked crosswalks are present across the north-, south-, and westbound approach. While some curb ramps within the West Ninth Street corridor appear to comply with ADA standards, there are others currently present that do not appear to comply. The intersection of West Ninth Street and North Dutton

Avenue currently has curb ramps, marked crosswalks, and pedestrian signals. While the curb ramps on the east side of the intersection appear to be compliant with ADA standards, those on the west side do not appear to comply. Along North Dutton Avenue, continuous sidewalk in good condition is only present on the east side, ranging between 5 to 6 feet wide. On the west side, North Dutton Avenue has a notable lack of any usable sidewalk. Within this corridor, the intersections with residential cross streets feature curb ramps that do not appear to be compliant with ADA standards and are currently without marked crosswalks. The intersection of West Eighth Street and North Dutton Avenue currently has a marked crosswalk across the north approach, and curb ramps at the northwest, northeast, and southeast corner of the intersection. These curb ramps appear to not comply with ADA standards. Street lighting was confirmed to be present within all of the critical study area corridors, but lighting functionality or lighting coverage was not confirmed as a part of this study.

Critical to this study is the number of pedestrians currently encountered at the existing unofficial SMART rail crossing at Jennings Avenue, as well as at the intersections closest to the three approaches being considered for closures at the SMART rail crossings. The pedestrian counts indicate that, of the three options being considered for closure at the SMART rail crossing, West Sixth Street currently experiences the most pedestrian traffic over the course of a typical weekday. However, it is important to note that this traffic consists largely of the recreational variety. West Seventh Street and West Eighth Street both exhibit more grade school related traffic when compared to West Sixth Street, which is important to note for providing for safe routes to school. Elementary schools are currently present on both sides of the SMART rail corridor. To the east, the Kid Street Learning Center charter school operates nearby at West Eighth Street and Davis Street. To the west of the SMART rail corridor, Lincoln Elementary School operates at West Ninth Street and Simpson Street. The existing unofficial SMART rail crossing at Jennings Avenue, when compared to the Wilson Street intersections, experiences a low volume of pedestrian traffic. However, the pedestrian traffic that does use the unofficial crossing contains a large percentage of grade school children. As mentioned within Section 3.3 – Existing Traffic Volumes, these pedestrian counts were performed in October 2013, during a typical weekday when school was in session. Prior to these counts being performed, the Helen Lehman Elementary School had told the school children, through direction by SMART, to not walk across the rail crossing. This is important to note when assessing the use of the existing unofficial crossing. The charts below exhibit the trends of the different classifications of pedestrian traffic encountered during the peak periods of a typical weekday at the four critical locations discussed above.


Jennings at SMART Crossing Pedestrian Counts
Commuter
Recreational
Secondary/College
Grade School
0
5
10
15
20
25
30
35
7:00 AM
7:30 AM
8:00 AM
8:30 AM
9:00 AM
9:30 AM
10:00 AM
10:30 AM
11:00 AM
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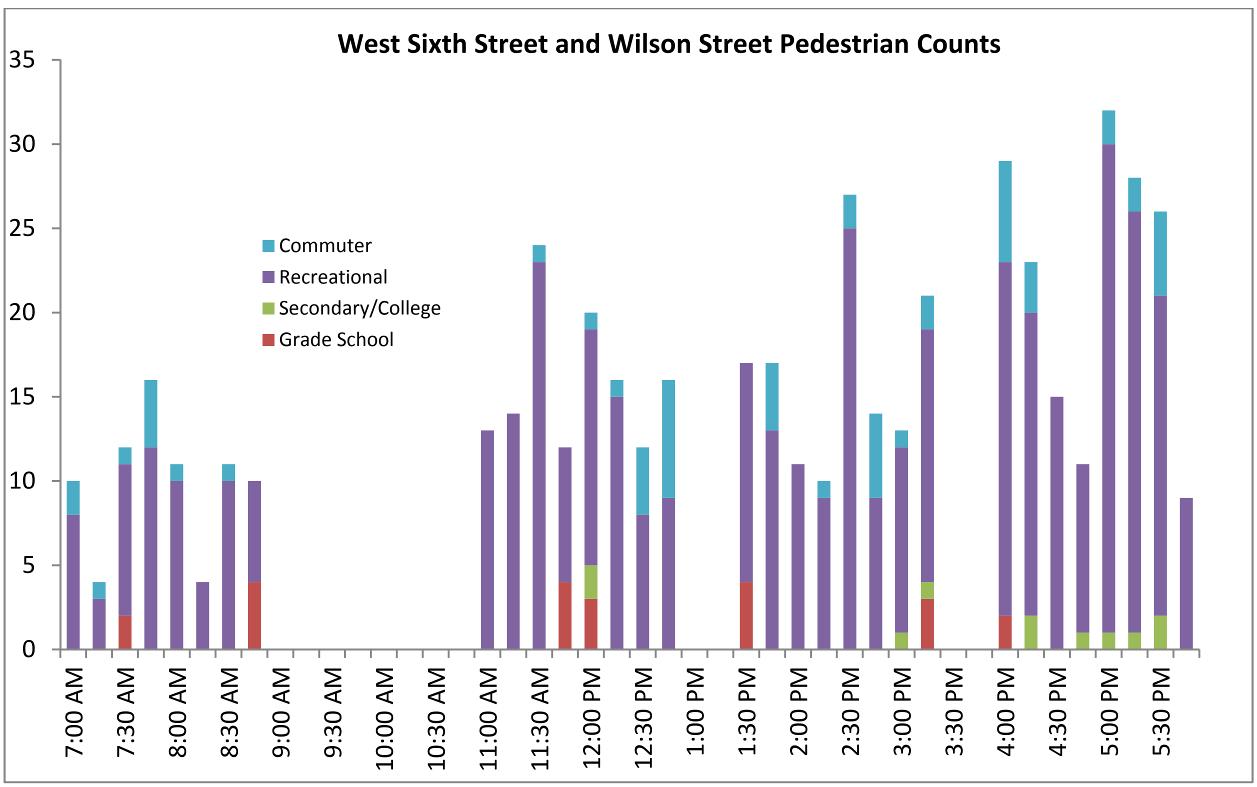
West Sixth Street and Wilson Street Pedestrian Counts
Commuter
Recreational
Secondary/College
Grade School
0
5
10
15
20
25
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7:30 AM
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9:00 AM
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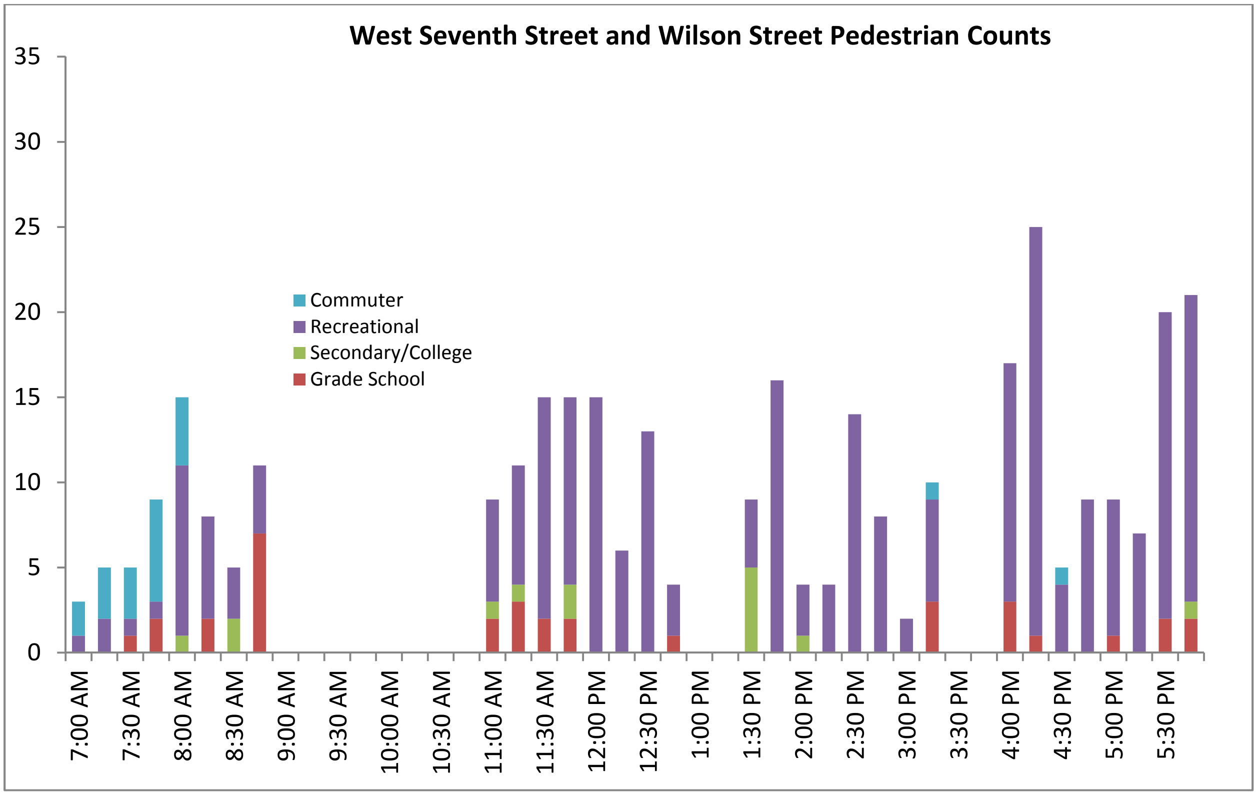
West Seventh Street and Wilson Street Pedestrian Counts
Commuter
Recreational
Secondary/College
Grade School
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8:30 AM
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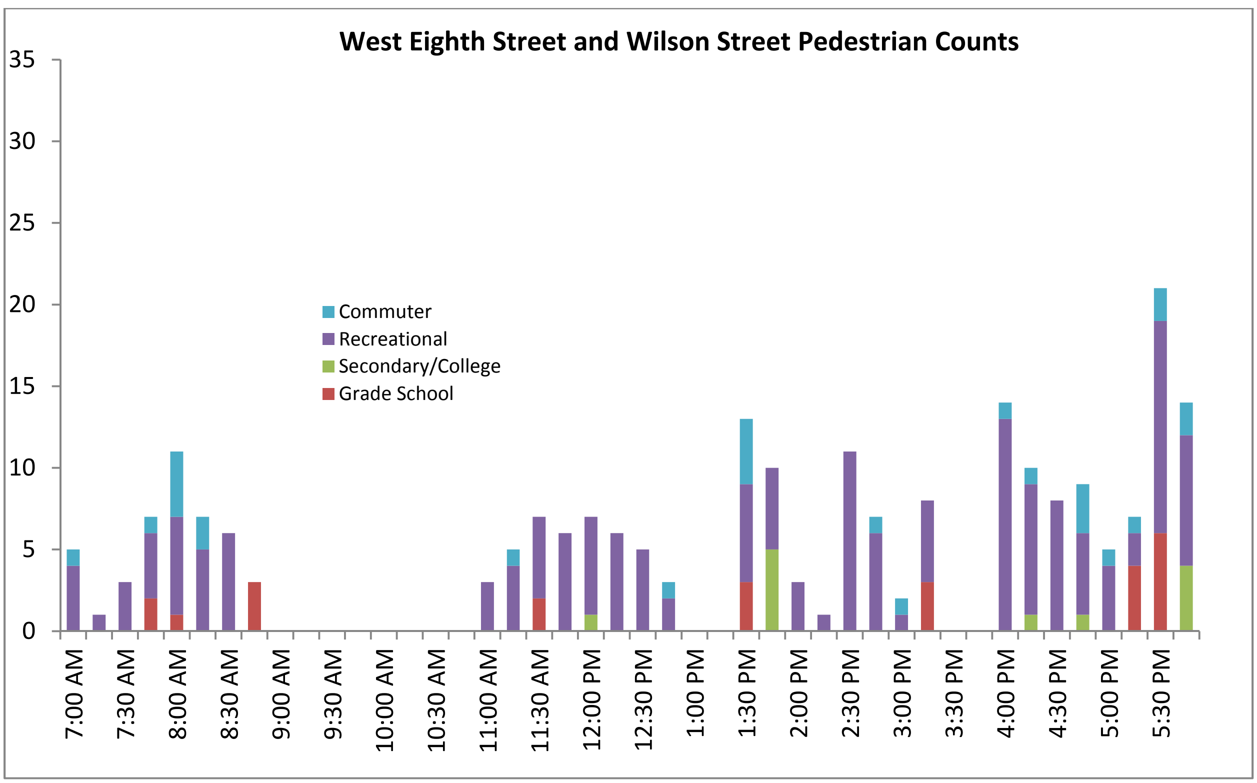
West Eighth Street and Wilson Street Pedestrian Counts
Commuter
Recreational
Secondary/College
Grade School
0
5
10
15
20
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30
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7:30 AM
8:00 AM
8:30 AM
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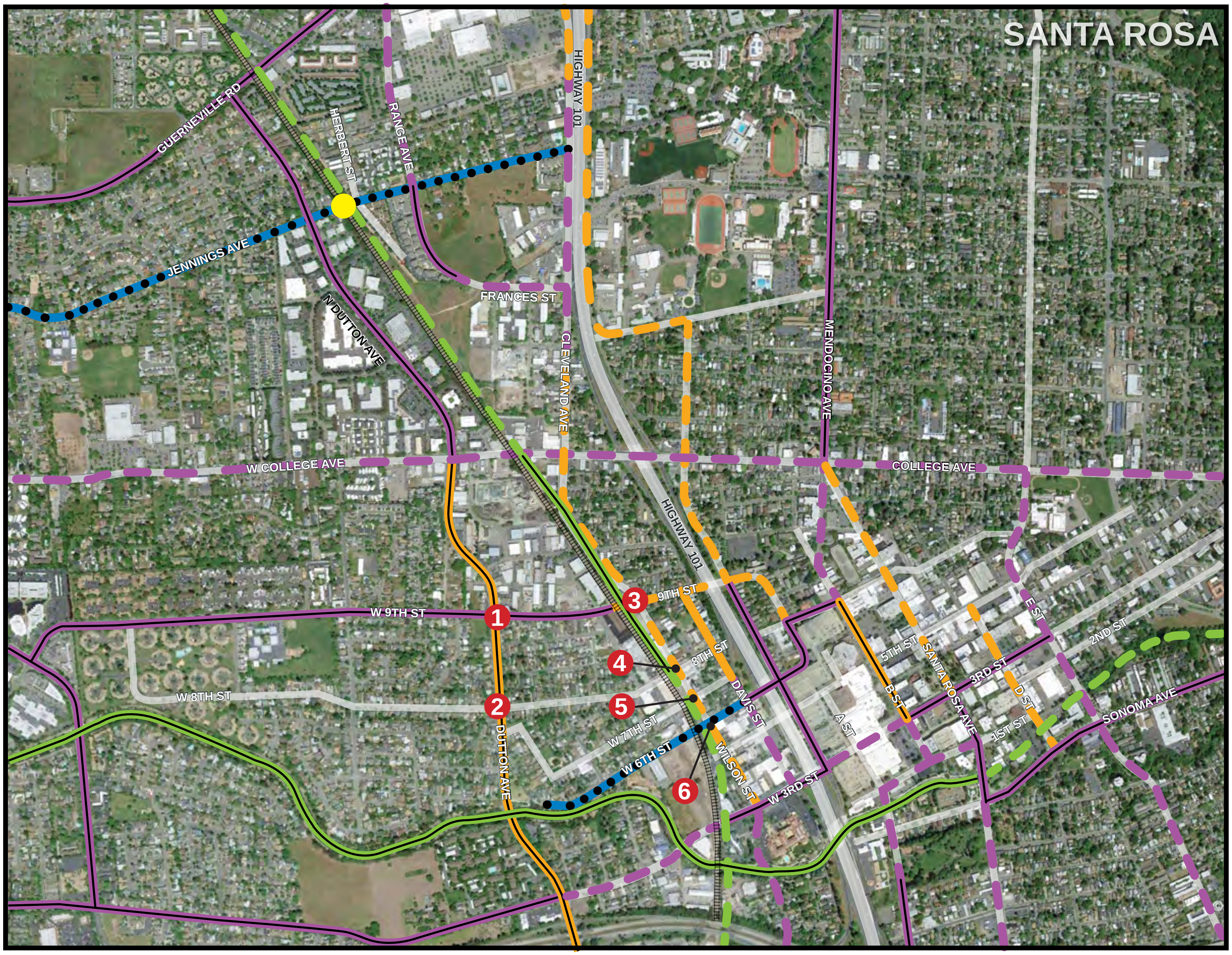
3.5.2 Bicycle Facilities

The SMART rail corridor at Jennings Avenue is currently not traversable by bicycle, unless you walk and carry your bicycle across the tracks. Jennings Avenue does not currently have a designated bicycle facility classification. Figure 4A shows the existing as well as planned designation of bicycle classifications within this portion of the City. Jennings Avenue, noted as Route 37 within this figure, is designated as a planned east-west route for bicycles within the vicinity of the SMART rail crossing. This route will be achieved through the planned conversion of Jennings Avenue to a bike boulevard. It is also important to note that Figure 4A illustrates a current parallel east-west route for bicycles within this portion of the City, which exists through the Class II bike lanes along Guerneville Road (Route 36). While the only designated bicycle facilities that apply to the study area intersections are the Class II bike lanes located on West Ninth Street, bicycle use is currently frequently encountered on all of the critical corridors of the study area. It is furthermore important to note that West Sixth Street is designated as a future Bicycle Boulevard in the Bicycle and Pedestrian Master Plan 2010.



Legend:

- 1 Traffic Study Intersections
- Jennings Avenue Project Location
- Proposed Bike Blvd
- Existing Class I
- Proposed Class I
- Existing Class II
- Proposed Class II
- Existing Class III
- Proposed Class III

N

City of Santa Rosa
Jennings Avenue Pedestrian and Bicycle Rail Crossing EIR

Job Number	8410868
Revision	
Date	Oct 2014

Intersection Locations and Bicycle Routes

Figure 4A

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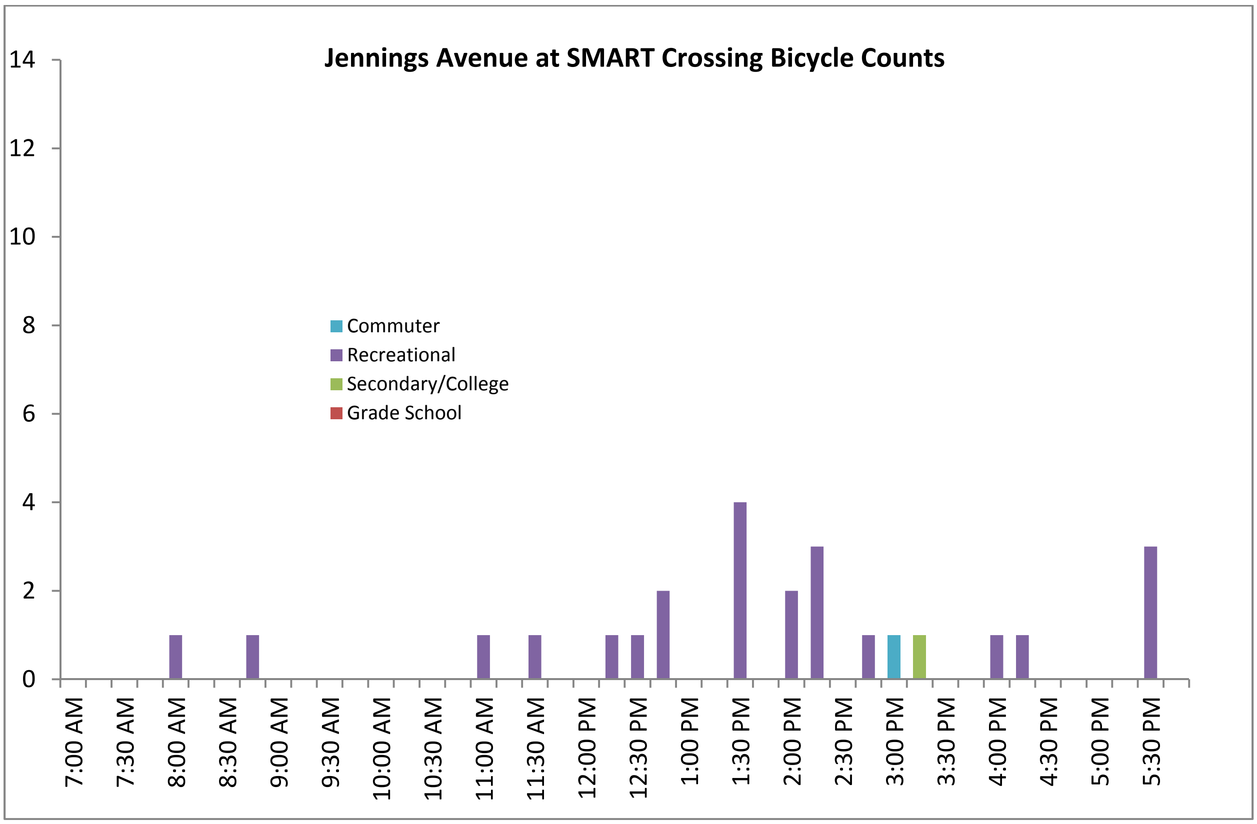
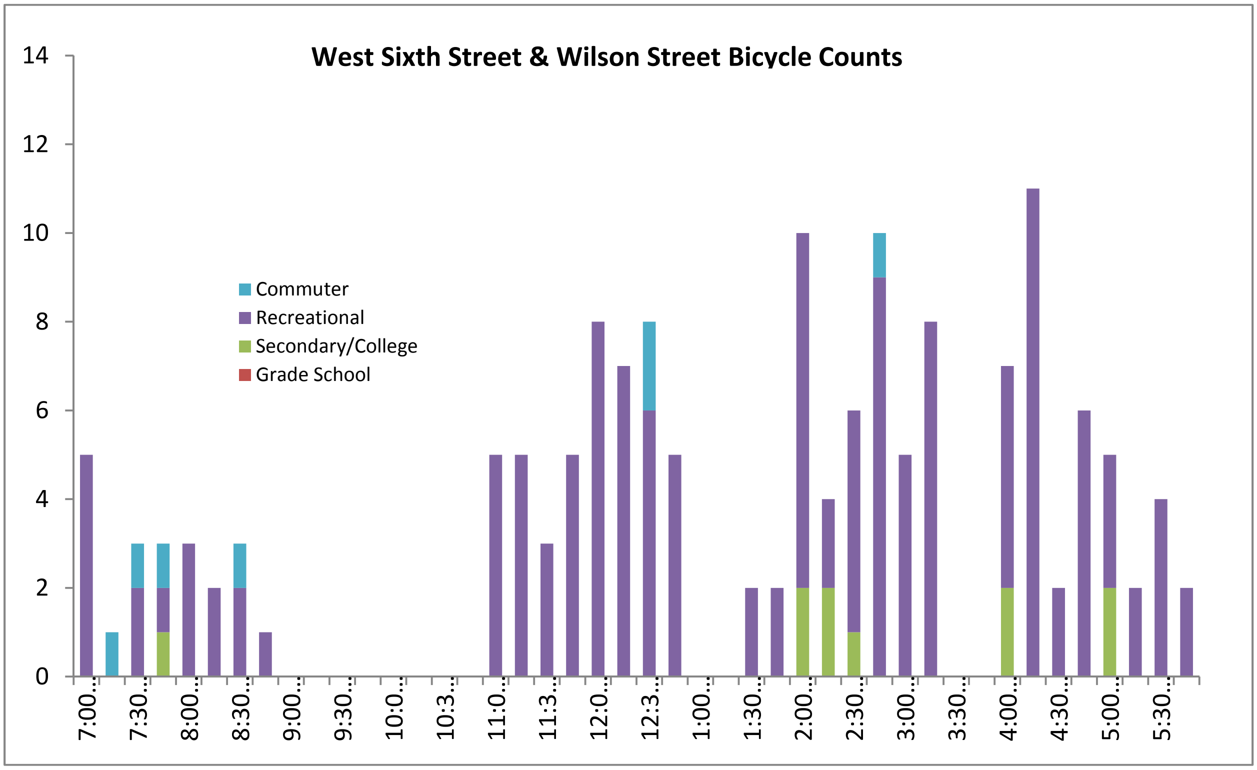
G:\02057 - City of Santa Rosa\02057-8410868 Jennings Ave Crossing EIR\04-Technical Work\Traffic Impact Analysis Report\Traffic Figures\InDesign\Intersection Loc and Bicycle Routes.indd October 9, 2014 2:01 PM

Like the pedestrian considerations, critical to this study is the number of bicycles currently using the existing unofficial SMART rail crossing at Jennings Avenue, as well as at the intersections closest to the three approaches being considered for closures at the SMART rail crossings, these being West Sixth Street and Wilson Street, West Seventh Street and Wilson Street, and West Eighth Street and Wilson Street. Bicycle counts performed during the peak traffic periods indicate that the three options being considered for closure at the SMART rail crossing exhibit roughly the same amount of bicycle traffic over the course of a typical weekday. Another important trend to note is that the number of grade school related bicycle trips is negligible during each of the peak periods, making issues related to detours involving bicycles less sensitive than those related to detours involving pedestrians. The existing unofficial SMART rail crossing at Jennings Avenue, when compared to the Wilson Street intersections, experiences a low volume of bicycle traffic. However, this could be due to the current lack of a traversable path. The charts below exhibit the trends of the different classifications of bicycle traffic encountered during the peak periods of a typical weekday at the four critical locations discussed above.




West Sixth Street & Wilson Street Bicycle Counts
Commuter
Recreational
Secondary/College
Grade School
0
2
4
6
8
10
12
14
7:00…
7:30…
8:00…
8:30…
9:00…
9:30…
10:0…
10:3…
11:0…
11:3…
12:0…
12:3…
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5:00…
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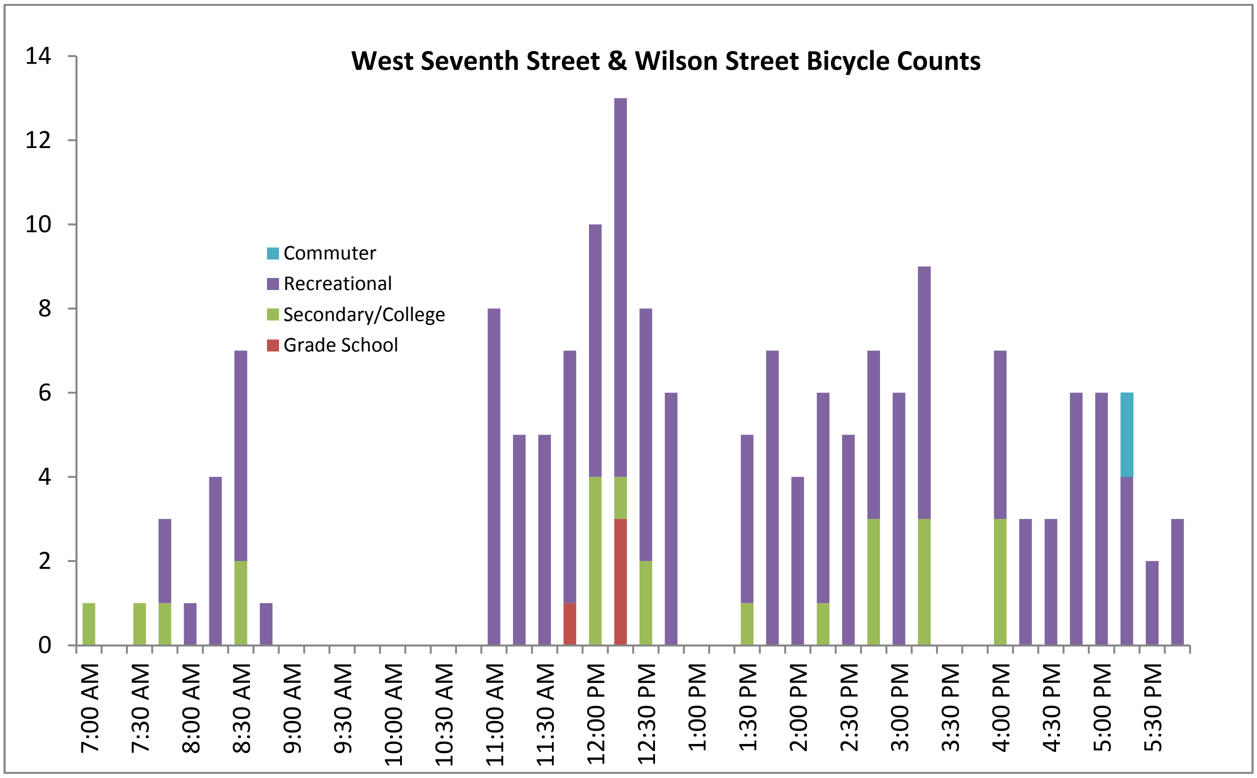
West Seventh Street & Wilson Street Bicycle Counts
Commuter
Recreational
Secondary/College
Grade School
0
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7:30 AM
8:00 AM
8:30 AM
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10:00 AM
10:30 AM
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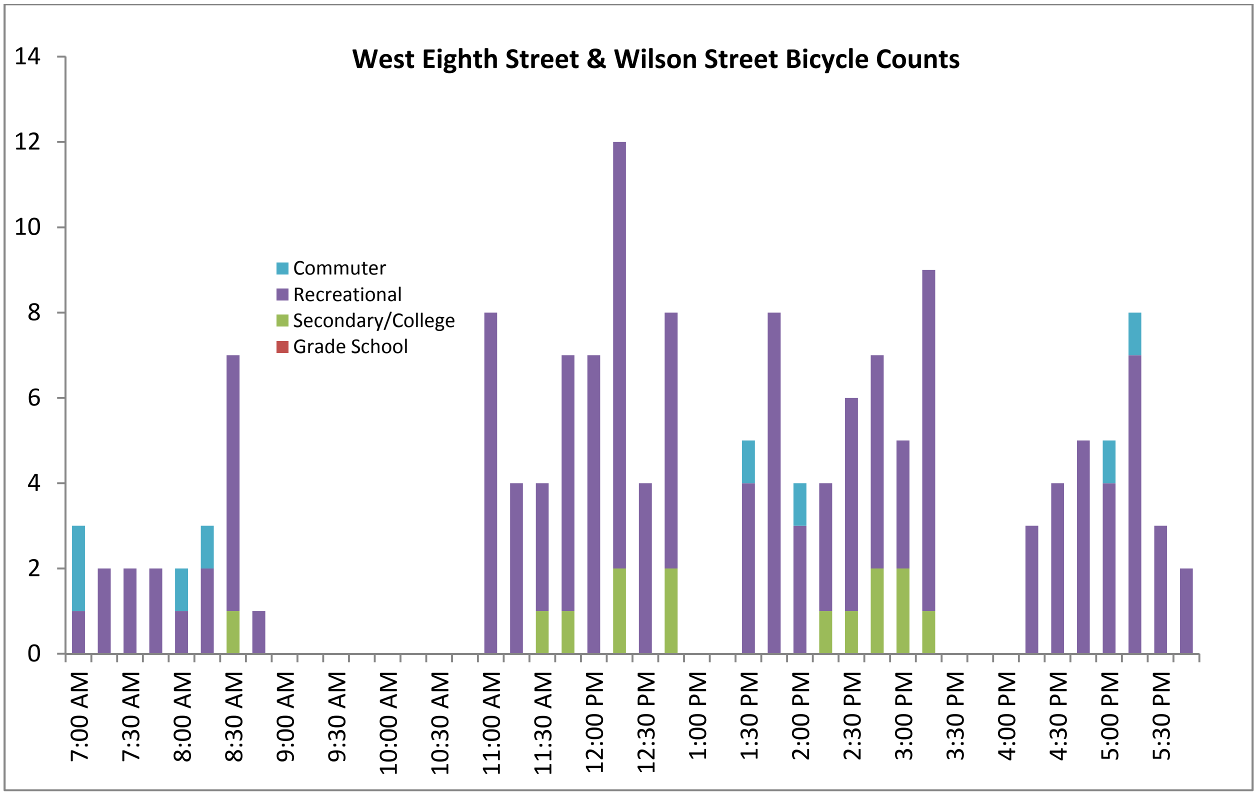


3.6 Existing Transit Routes and Truck Circulation

Transit routes within the project area consist of City Bus routes 3 and 10 within the Downtown, and routes 15 and 17 near the proposed Jennings Avenue Crossing. Route 3, West Ninth Street, provides westbound service from the Downtown Transit Mall along Wilson from West Fifth Street to West Eighth Street, using Donahue Street to West Ninth Street. Donahue Street is used as an alternate to Wilson between West Eighth and West Ninth Streets due to existing parking on the west side of Wilson Street, which limits the travel lanes width to 9 feet or less in both directions. The existing roadway width is not adequate for transit vehicles or trucks, therefore Eighth Street and Donahue serve as the truck route to through heavy vehicles. South of Eighth Street parking is prohibited along the west side of Wilson Street.

Route 10, Coddingtown, provides service from the Downtown Transit Mall along Cleveland Avenue north from the intersection of Ninth Street and Wilson Street. Route 17, Piner Road, provides service between the Downtown Transit Mall and the Northside Transfer Station (Coddingtown) along North Dutton Avenue. Route 15, Stony Point Road, provides service along Guerneville Road between the Northside Transfer Station and Marlow Road. The project area is served by transit Santa Rosa City Bus within a quarter-mile walk of various route transit services, all of which lead to transfer stations.

In the vicinity of Downtown the project area consists of various industrial, retail, and service establishments, all requiring varied truck delivery circulation needs. The issues discussed here also apply to municipal and emergency service vehicles. While commercial vehicles are restricted from traveling

through neighborhood streets, deliveries to locations within the project area are allowed. With regard to this analysis, two retail businesses within the project area were reviewed for potential circulation impacts; Western Farm Center and Franco American Bakery. It is expected that other establishments within the study area, such as Stark's Steak and Seafood restaurant, utilize delivery trucks with less drastic turning maneuvers than those associated with Western Farm Center and Franco American Bakery. Therefore, the circulation impacts of other businesses within the study area are represented indirectly within the discussion. Both the Western Farm Center and the Franco American Bakery are understood to take deliveries from a variety of trucks. With Western Farm Center, the internal lots are used for loading and unloading of goods, and provide for connectivity between West Eighth and West Seventh Streets. Through discussions with the Western Farm Center, it is understood that single and double tractor-trailers access the sites via West Seventh, West Eighth, and Donahue Streets. Specifically, the largest vehicle that may be encountered at this business corresponds with a WB-67 design vehicle. Through discussions with Franco American Bakery, it is understood that the delivery of raw materials may be made with a larger vehicle, inclusive of a WB-65.

The existing activity within the study area shows that these vehicles are currently capable of turning to/from either the Western Farm Center or the Franco American Bakery. Vehicles accessing the Franco American Bakery utilize Madison Street to access the frontage for unloading. Other delivery or service vehicles for other local establishments are expected to be smaller or more maneuverable within the circulation network of the project area, and would not require any additional physical improvements.

4. Analysis of the Preferred Project, Rail Overcrossing Alternative, and No Project Alternative

4.1 Preferred Project

The proposed at-grade crossing at Jennings Avenue would preserve the existing access condition, so current pedestrians and cyclists could avoid being forced to re-route and/or undergo a mode switch to motor vehicles. Because no additional vehicles would be added to the area adjacent to Jennings Avenue, no vehicular traffic impact would be expected with this alternative. This alternative would also improve safety and accessibility for pedestrians and cyclists by providing a traversable, ADA-compliant surface across the SMART rail corridor. As the implementation of this alternative may involve the CPUC requirement of closure of one of West Sixth Street, West Seventh Street, or West Eighth Street, this section explores the traffic impacts, as well as pedestrian, bicycle, transit, and truck impacts, associated with these various closure options.

4.2 Preferred Project with Closure Option A (West Sixth Street)

In order to facilitate an at-grade rail crossing at Jennings Avenue, the closure of West Sixth Street at the approach to the SMART rail corridor is one of three options being considered by the City. For purposes of this study, this closure scenario is being referred to as Closure Option A. Data that was utilized for the Existing Peak Hour scenarios, summarized in Figure 4 of this report, was similarly utilized for the analysis of the considered closure of West Sixth Street.

4.2.1 Preferred Project with Closure Option A (West Sixth Street) Assumptions

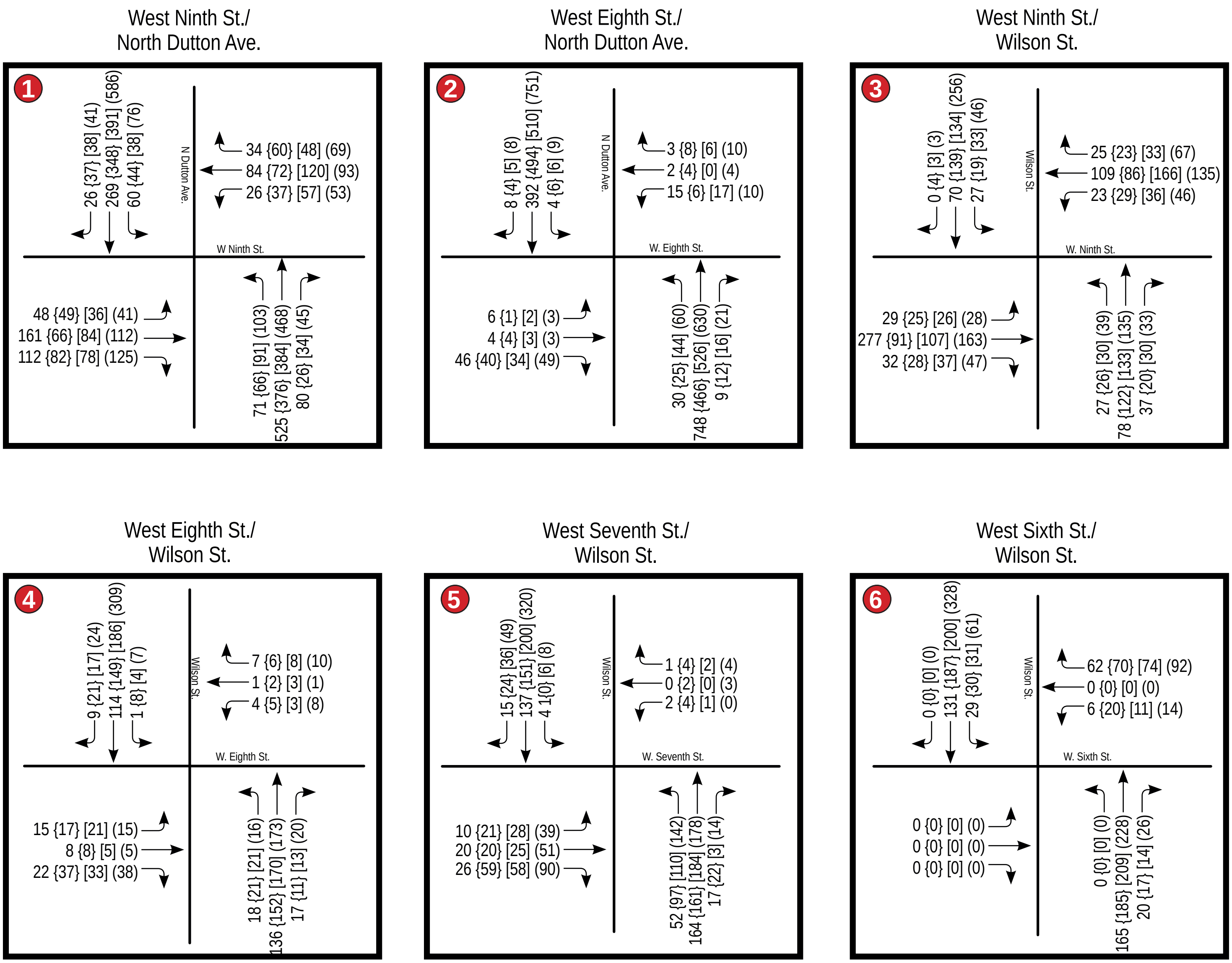
Existing peak hour traffic volumes, shown with Figure 4 of this Study, were reallocated to reflect the option in which West Sixth Street would be closed to traffic at the approach to the SMART rail corridor. This reallocation was based largely on the assumption that traffic seeking to cross the SMART rail corridor at West Sixth Street would recognize the need to use a different crossing, and, consequently, reroute northward to the rail crossing at West Seventh Street. Those movements entering or exiting the west leg of the intersection of West Sixth Street and Wilson Street in the Existing Condition were assumed to make similar movements at the intersection of West Seventh Street and Wilson Street under the Closure Option A scenario. This could be thought of as a conservative, worst-case scenario in which all of the traffic that reaches Wilson Street has no prior knowledge of the closure, and no traffic is assumed to use the existing adjacent grid network to re-route. The stop control and lane configurations that exist at the study area intersections in the existing condition were assumed to remain the same under Closure Option A.

4.2.2 Traffic Volumes- Preferred Project with Closure Option A (West Sixth Street)

Based on the assumptions stated above, Preferred Project with Closure Option A (West Sixth Street) traffic volumes are indicated in Figure 5.

4.2.3 Study Intersections Level of Service - Preferred Project with Closure Option A (West Sixth Street)

Upon reallocation of the peak hour traffic volumes to reflect Closure Option A, in which West Sixth Street would be closed to traffic at the approach to the SMART rail corridor, all of the movements within the study intersections are expected to continue operating at the same levels of service as under Existing Conditions, with exception of the eastbound movement at the intersection of West Seventh Street and Wilson Street. This eastbound movement at West Seventh Street goes from LOS B in the existing condition to LOS C in the School Dismissal peak hour, and to LOS D in the PM peak hour. The Closure Option A (West Sixth Street) Scenario Level of Service calculations are summarized in Table 4, and full results are provided in Appendix C.



Legend:

1 Study Intersection

xxx Weekday AM Peak Hour Volume

{xxx} Weekday Midday Peak Hour Volume

[xxx] Weekday School Dismissal Peak Hour Volume

(xxx) Weekday PM Peak Hour Volume

N

City of Santa Rosa
Jennings Avenue Crossing
Traffic Impact Analysis Report

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Revision
Date Jul 2014

Existing Plus Closure Option A
Traffic Volumes (West Sixth St.)

Figure 5

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Table 4 Summary of Peak Hour Intersection Level of Service Calculations – Preferred Project with Closure Option A (West Sixth Street)

Intersection	Preferred Project with Closure Option A (West Sixth Street)			
	AM Peak	**Midday Peak**	**School Dismissal Peak**	**PM Peak**
	Delay/LOS	**Delay/LOS**	**Delay/LOS**	**Delay/LOS**
1. West Ninth Street/North Dutton Avenue	9.9/A	8.8/A	9.5/A	9.4/A
2. West Eighth Street/North Dutton Avenue				
Eastbound Approach	*11.0/B*	*10.8/B*	*11.1/B*	*12.7/B*
Westbound Approach	*17.5/C*	*12.6/B*	*14.8/B*	*16.4/C*
Northbound Left-turn	8.3/A	8.8/A	8.7/A	9.8/A
Southbound Left-turn	9.4/A	8.4/A	8.6/A	9.8/A
3. West Ninth Street/Wilson Street	10.4/B	9.5/A	11.0/B	14.6/B
4. West Eighth Street/Wilson Street				
Eastbound Approach	*10.7/B*	*10.8/B*	*11.3/B*	*12.3/B*
Westbound Approach	*10.0/B*	*11.0/B*	*10.8/B*	*12.2/B*
Northbound Left-turn	0.9/A	1.0/A	1.0/A	0.8/A
Southbound Left-turn	0.1/A	0.4/A	0.2/A	0.2/A
5. West Seventh Street/Wilson Street				
Eastbound Approach	*11.7/B*	*12.8/B*	*15.5/C*	*28.0/D*
Westbound Approach	*12.0/B*	*13.5/B*	*12.6/B*	*14.2/B*
Northbound Left-turn	2.0/A	3.1/A	3.5/A	4.4/A
Southbound Left-turn	0.2/A	0.5/A	0.2/A	0.2/A
6. West Sixth Street/Wilson Street	8.4/A	9.0/A	9.2/A	11.3/B

Notes: *Italics* = results for minor movements at unsignalized intersections
Bold = results exceed acceptable level of service
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

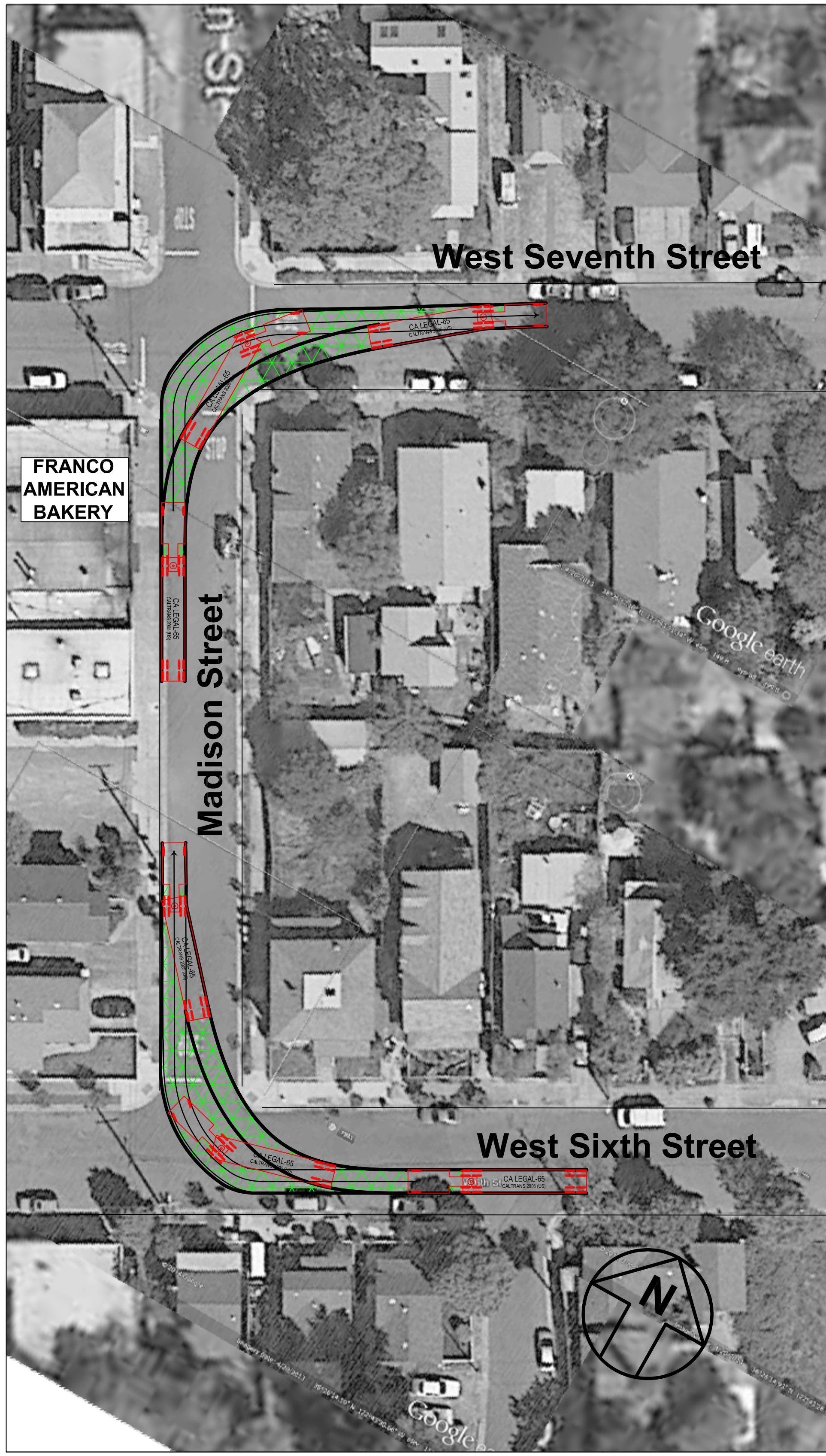
4.2.4 Pedestrians and Bicycles - Preferred Project with Closure Option A (West Sixth Street)

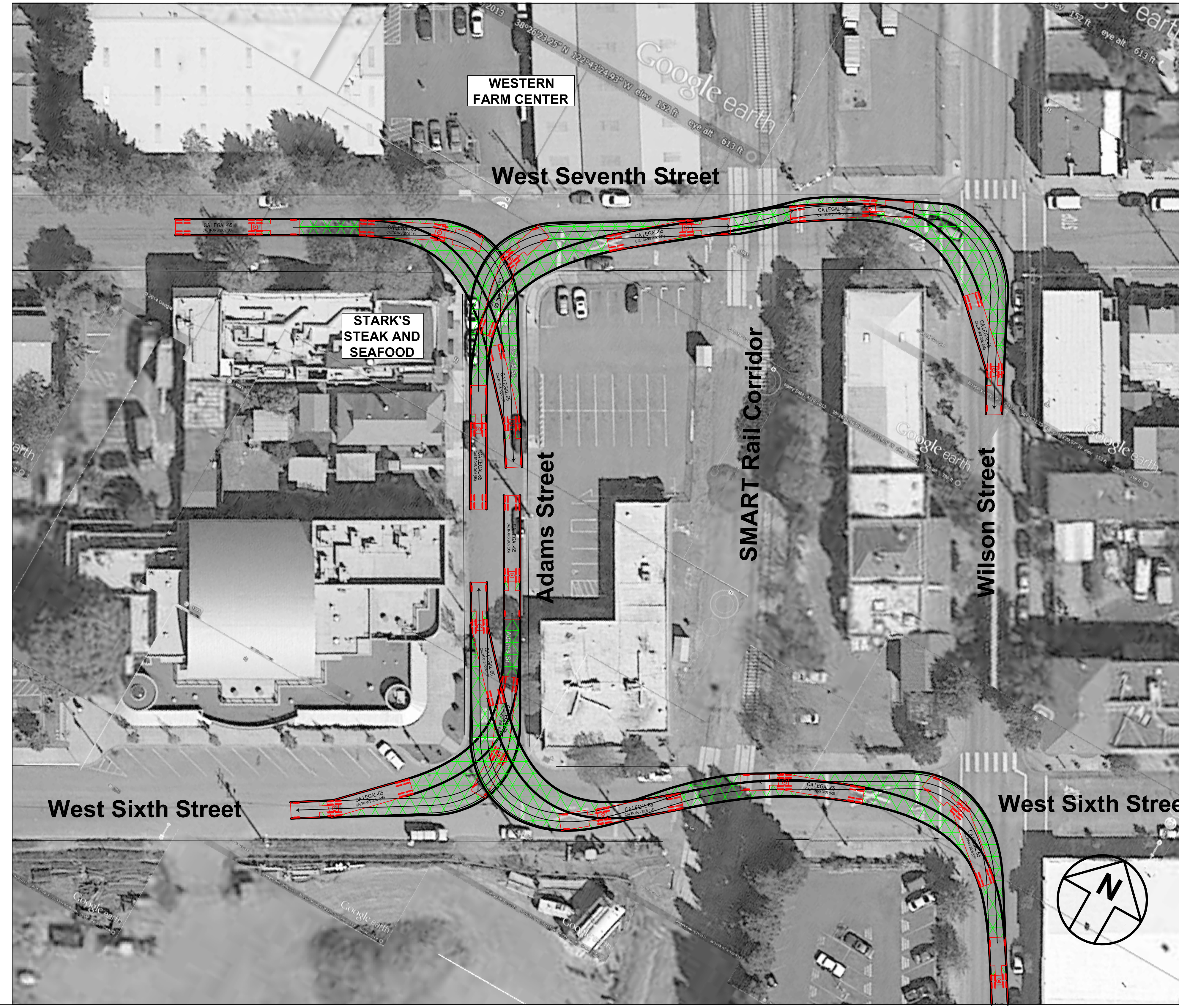
Discussion of pedestrian and bicycle considerations must involve assessment of the existing volume data and the detour route anticipated with the particular roadway closure. While the three roadways being considered for closure have roughly the same amount of bicycle traffic during the peak periods of typical weekday, West Sixth Street serves a considerably greater amount of pedestrian traffic when compared to the other two options. The majority of this traffic was classified as recreational trips. Similar to the anticipated re-routing of motor vehicles, pedestrian and bicycle detours related to the closure of West Sixth Street would likely involve West Seventh Street. Such a detour would add approximately 800 feet onto a trip seeking to cross the SMART rail corridor using West Sixth Street. It is anticipated that this additional trip length represents less than one minute of additional travel time for cyclists, and approximately 3.5 minutes of travel time for walking pedestrians. This additional distance and time would not exceed half a mile or 15 minutes, and would be a reasonable additional trip length for a bicycle or pedestrian that would not tend to cause them to switch modes to a motor vehicle. However, the closure of West Sixth Street would conflict with the route indicated for the future Sixth Street Class II bicycle lane in the General Plan and the Downtown Station Area Plan, and the route for the future bicycle boulevard in the Bicycle and Pedestrian Master Plan. Therefore, this impact would be significant.

4.2.5 Transit and Truck Circulation (Preferred Project with Closure Option A (West Sixth Street)

Based on a review of existing transit routes within the project area, there would not be an impact to circulation of the City BUS with a closure of West Sixth Street.

Closure of West Sixth Street would be expected to limit access of the larger design vehicle used by businesses within the project area, as it is understood both West Sixth and Seventh are used to create reciprocal in/out access to Franco American Bakery. Figure 5A shows the truck turning movements that would be expected to/from the Franco American Bakery, using a WB-65 as the design vehicle. The movements shown with this exhibit are applicable to crossing the SMART rail corridor with the closure of West Sixth Street, as well as the closure of West Seventh Street. With these closures, Figure 5A shows a need for time limited restriction of parking along Adams Street to provide for truck access and circulation. This parking restriction would be applicable to the entirety of both sides of Adams Street, and be subject to anticipated delivery times. The implementation of this parking restriction would need to be coordinated with the specific businesses in the project area.





Jennings Avenue Pedestrian and Rail Crossing Project
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Figure 5A: WB-65 Truck Turn Access Template

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Plot Date: 23 July 2014 - 3:27 PM Cad File No: N:\US\Santa Rosa\Projects\02057 - City of Santa Rosa\02057-8410868 Jennings Ave Crossing EIR\06-CAD\Figures\Truck-Bus Turn Exhibit\AutoTurn West Side.dwg

4.3 Preferred Project with Closure Option B (West Seventh Street)

In order to facilitate an at-grade rail crossing at Jennings Avenue, the closure of West Seventh Street at the approach to the SMART rail corridor is another option being considered by the City. For purposes of this study, this closure scenario is being referred to as Closure Option B. Data that was utilized for the Existing Peak Hour scenarios, summarized in Figure 4 of this report, was similarly utilized for the analysis of the considered closure of West Seventh Street.

4.3.1 Preferred Project with Closure Option B (West Seventh Street) Assumptions

Existing peak hour traffic volumes, shown with Figure 4 of this Study, were reallocated to reflect the option in which West Seventh Street would be closed to traffic at the approach to the SMART rail corridor. This reallocation was based largely on the assumption that traffic seeking to cross the SMART rail corridor at West Seventh Street would recognize the need to use a different crossing, and, consequently, reroute southward to the rail crossing at West Sixth Street. Those movements entering or exiting the west leg of the intersection of West Sixth Street and Wilson Street in the Existing Condition were assumed to make similar movements at the intersection of West Seventh Street and Wilson Street under the Closure Option A scenario. Like Closure Option A, this could be thought of as a conservative, worst-case scenario in which all of the traffic that reaches Wilson Street has no prior knowledge of the closure, and no traffic is assumed to use the existing adjacent grid network to re-route. The stop control and lane configurations that exist at the study area intersections in the existing condition were assumed to remain the same under Closure Option B.

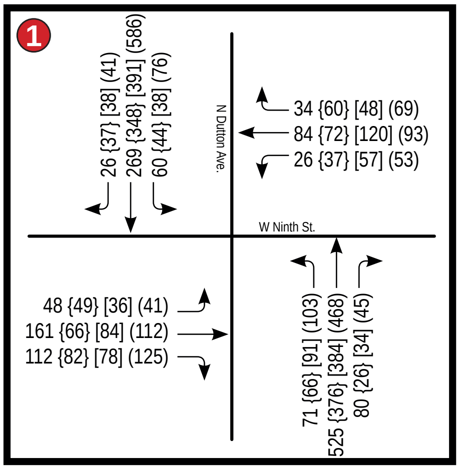
4.3.2 Traffic Volumes - Preferred Project with Closure Option B (West Seventh Street)

Based on the assumptions stated above, Preferred Project with Closure Option B (West Seventh Street) traffic volumes are indicated in Figure 6.

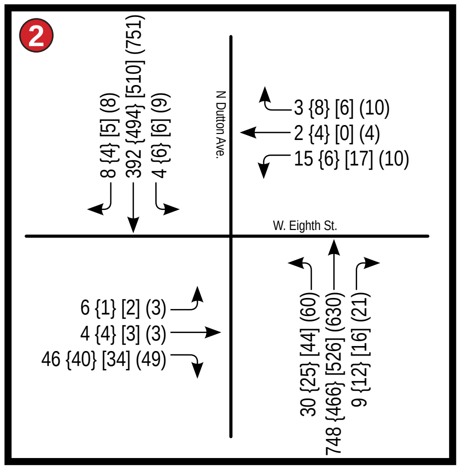
4.3.3 Study Intersections Level of Service - Preferred Project with Closure Option B (West Seventh Street)

Upon reallocation of the peak hour traffic volumes to reflect Closure Option B, in which West Seventh Street would be closed to traffic at the approach to the SMART rail corridor, all of the movements within the study intersections are expected to continue operating at the same levels of service as under Existing Conditions, with exception of the intersection of West Sixth Street and Wilson Street. This movement goes from LOS A in the existing condition to LOS B in the School Dismissal peak hour, but this change represents an increase of less than one second of average control delay. The Closure Option B (West Seventh Street) Scenario Level of Service calculations are summarized in Table 5, and full results are provided in Appendix D.

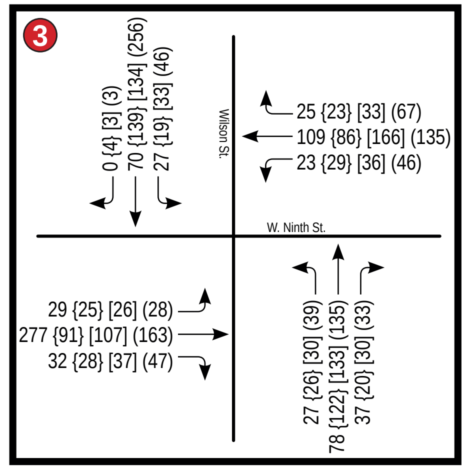
West Ninth St./
North Dutton Ave.



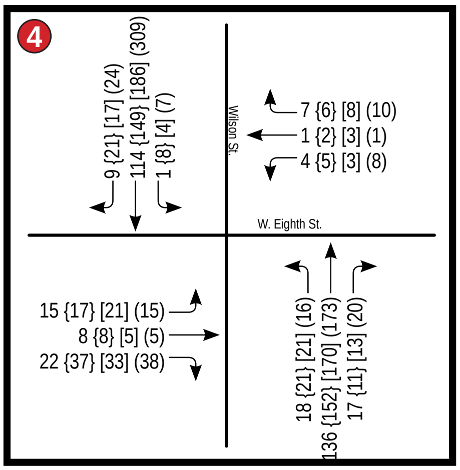
West Eighth St./
North Dutton Ave.



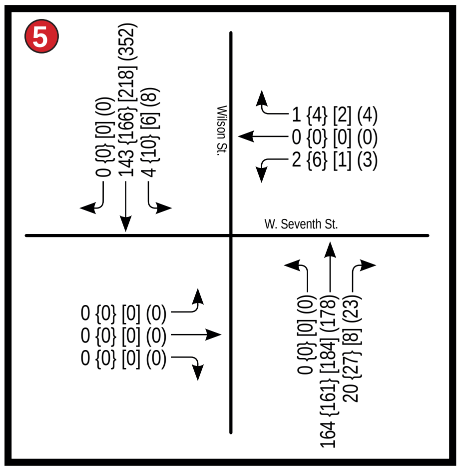
West Ninth St./
Wilson St.



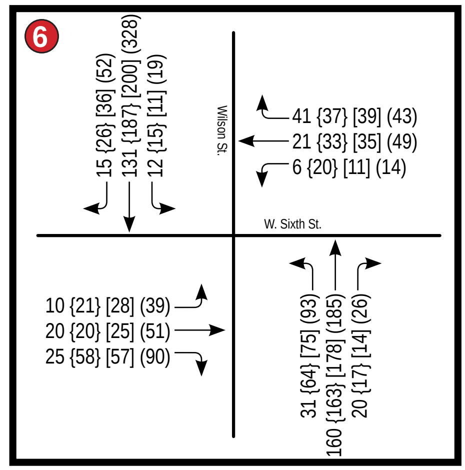
West Eighth St./
Wilson St.



West Seventh St./
Wilson St.



West Sixth St./
Wilson St.



Legend:

1 Study Intersection
xxx Weekday AM Peak Hour Volume
{xxx} Weekday Midday Peak Hour Volume
[xxx] Weekday School Dismissal Peak Hour Volume
(xxx) Weekday PM Peak Hour Volume

N

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Jennings Avenue Crossing
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Revision
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Existing Plus Closure Option B
Traffic Volumes (West Seventh St.)

Figure 6

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Table 5 Summary of Peak Hour Intersection Level of Service Calculations - Preferred Project with Closure Option B (West Seventh Street)

Intersection	Preferred Project with Closure Option B (West Seventh Street)			
	AM Peak	**Midday Peak**	**School Dismissal Peak**	**PM Peak**
	Delay/LOS	**Delay/LOS**	**Delay/LOS**	**Delay/LOS**
1. West Ninth Street/North Dutton Avenue	9.9/A	8.8/A	9.5/A	9.4/A
2. West Eighth Street/North Dutton Avenue				
Eastbound Approach	*11.0/B*	*10.8/B*	*11.1/B*	*12.7/B*
Westbound Approach	*17.5/C*	*12.6/B*	*14.8/B*	*16.4/C*
Northbound Left-turn	8.3/A	8.8/A	8.7/A	9.8/A
Southbound Left-turn	9.4/A	8.4/A	8.6/A	9.8/A
3. West Ninth Street/Wilson Street	10.4/B	9.5/A	11.0/B	14.6/B
4. West Eighth Street/Wilson Street				
Eastbound Approach	*10.7/B*	*10.8/B*	*11.3/B*	*12.3/B*
Westbound Approach	*10.0/B*	*11.0/B*	*10.8/B*	*12.2/B*
Northbound Left-turn	0.9/A	1.0/A	1.0/A	0.8/A
Southbound Left-turn	0.1/A	0.4/A	0.2/A	0.2/A
5. West Seventh Street/Wilson Street				
Eastbound Approach	*0.0/A*	*0.0/A*	*0.0/A*	*0.0/A*
Westbound Approach	*10.4/B*	*10.6/B*	*10.2/B*	*11.3/B*
Northbound Left-turn	0.0/A	0.0/A	0.0/A	0.0/A
Southbound Left-turn	0.2/A	0.5/A	0.2/A	0.2/A
6. West Sixth Street/Wilson Street	8.8/A	9.9/A	10.4/B	14.9/B

Notes: *Italics* = results for minor movements at unsignalized intersections
Bold = results exceed acceptable level of service
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

4.3.4 Pedestrians and Bicycles - Preferred Project with Closure Option B (West Seventh Street)

While West Seventh Street has roughly the same amount of bicycle traffic during the peak periods of typical weekday when compared to West Sixth Street, this roadway serves considerably less pedestrian traffic comparatively. Similarly, the majority of this traffic on West Seventh Street was classified as recreational trips. Pedestrian and bicycle detours related to the closure of West Seventh Street would likely be similar to those involved with West Sixth Street. That is, a trip seeking to cross the SMART rail corridor using West Seventh Street would be re-routed to West Sixth Street, adding approximately 800 feet the same time and distance onto the trip as was reported with Closure Option A. It is anticipated that this additional trip length represents a less than one additional minute of travel time for cyclists, and approximately 3.5 minutes of travel time for walking pedestrians. This additional distance and time would not exceed half a mile or 15 minutes, and would be a reasonable additional trip length for a bicycle or pedestrian that would not tend to cause them to switch modes to a motor vehicle.

4.3.5 Transit and Truck Circulation (Preferred Project plus Closure Option B (West Seventh Street)

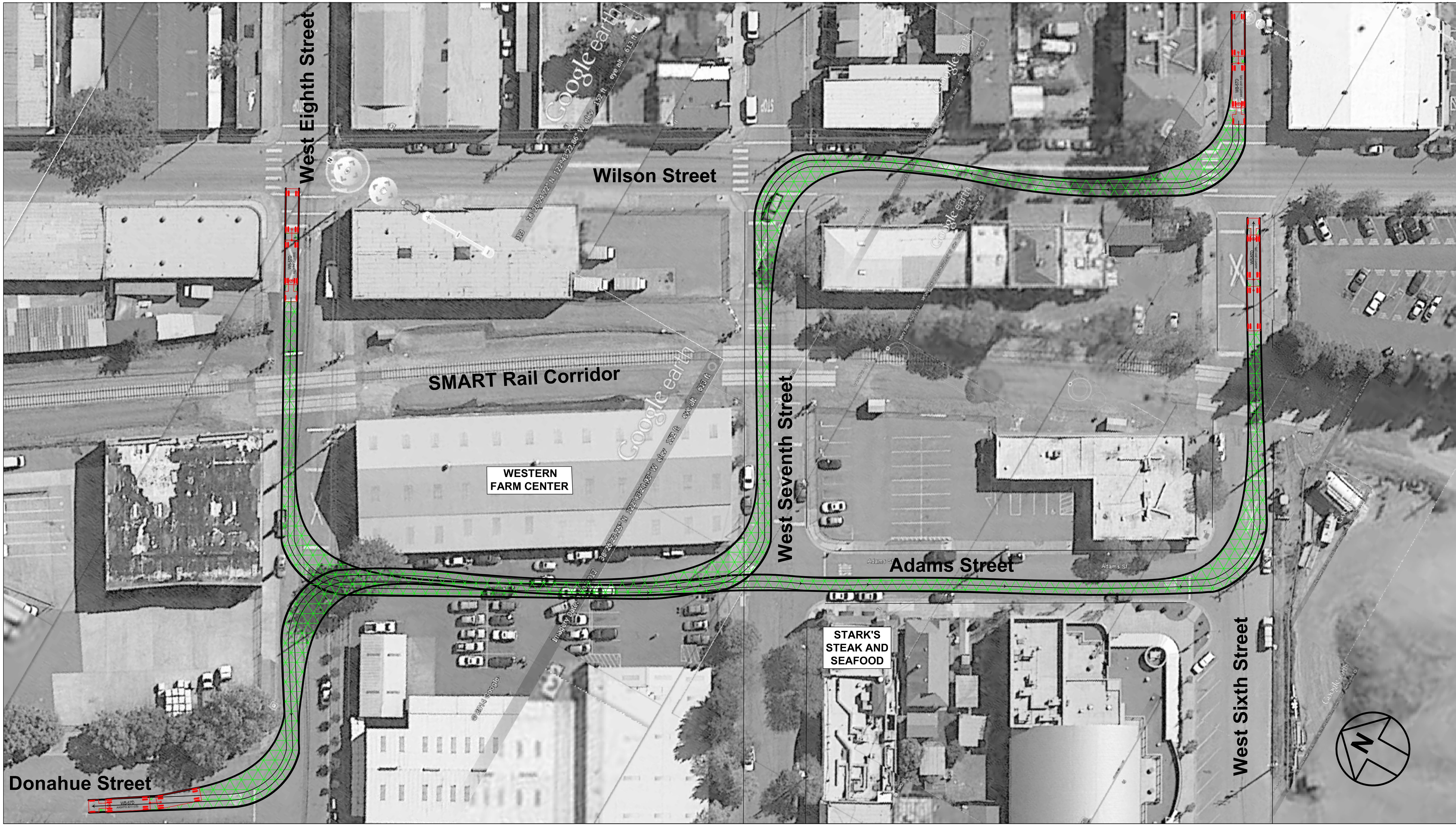
Based on a review of existing transit routes within the project area, there would not be an impact to circulation of the City BUS with a closure of West Seventh Street.

Closure of West Seventh Street would be expected to limit access of the larger design vehicle used by businesses within the project area, as it is understood both West Sixth and Seventh are used to create reciprocal in/out access to Franco American Bakery. As mentioned, with the closure of West Seventh Street, an analysis of design specific truck turns, as shown with Figure 5A, underlines a need for time limited restriction of parking along Adams Street to provide for truck access and circulation. This parking restriction would need to be coordinated with the specific deliveries in the project area and is expected to serve the needs of a variety of vehicles and businesses, including the Stark's Steak and Seafood restaurant.

Closure of West Seventh Street would require re-routing of large delivery trucks to utilize West Sixth Street. It has been noted that a 60-foot-long concrete median has been installed between the travel lanes on the west approach to the at-grade SMART rail crossings at West Sixth Street. In the event of a rail crossing closure at West Seventh Street, to facilitate the truck turning movements at West Sixth Street, the City shall remove parking along the south side of West Sixth Street at Adams Street (one parking spot) and widen the south side of the roadway between Adams Street and the at-grade rail crossing within the City's right-of-way. The additional widening shall facilitate the southbound left-turn truck movement from Adams Street to West Sixth Street around the existing center median island. As an alternative, the City shall remove the existing center median on West Sixth Street and replace it with a westbound exit gate at the at-grade rail crossing.

As the internal lots of Western Farm Center provide for connectivity between West Eighth and West Seventh Streets, the closure of West Seventh Street could possibly be expected to limit access to the WB-67 design vehicles that currently access the Western Farm Center site. Figure 6A shows the WB-67 truck turning movements that would be expected to/from the Western Farm Center. The movements shown with this exhibit are applicable to crossing the SMART rail corridor with the closure of either West

Sixth Street or West Seventh Street. The figure shows that, with these closures, trucks will continue to have accessibility to the Western Farm Center site, as well as maneuverability within the study area roadway network. As mentioned with the truck circulation discussion applicable to Closure Option A, the 60-foot-long concrete medians that have been installed between the travel lanes on the west approaches to the at-grade SMART rail crossings should be removed to facilitate the truck turning movements as shown with Figure 6A. To replace the safety measure provided by the medians, exit gates should be installed in the westbound direction at both of these crossings.



Jennings Avenue Pedestrian and Rail Crossing Project
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Figure 6A: WB-67 Truck Turn Access Template

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Plot Date: 23 July 2014 - 3:35 PM Cad File No: N:\US\Santa Rosa\Projects\02057 - City of Santa Rosa\02057-8410868 Jennings Ave Crossing EIR\06-CAD\Figures\Truck-Bus Turn Exhibit\AutoTurn West Side.dwg

4.4 Preferred Project with Closure Option C (West Eighth Street)

In order to facilitate an at-grade rail crossing at Jennings Avenue, the closure of West Eighth Street at the approach to the SMART rail corridor is another option being considered by the City. For purposes of this study, this closure scenario is being referred to as Closure Option C. Data that was utilized for the Existing Peak Hour scenarios, summarized in Figure 4 of this report, was similarly utilized for the analysis of the considered closure of West Eighth Street.

4.4.1 Preferred Project with Closure Option C (West Eighth Street) Assumptions

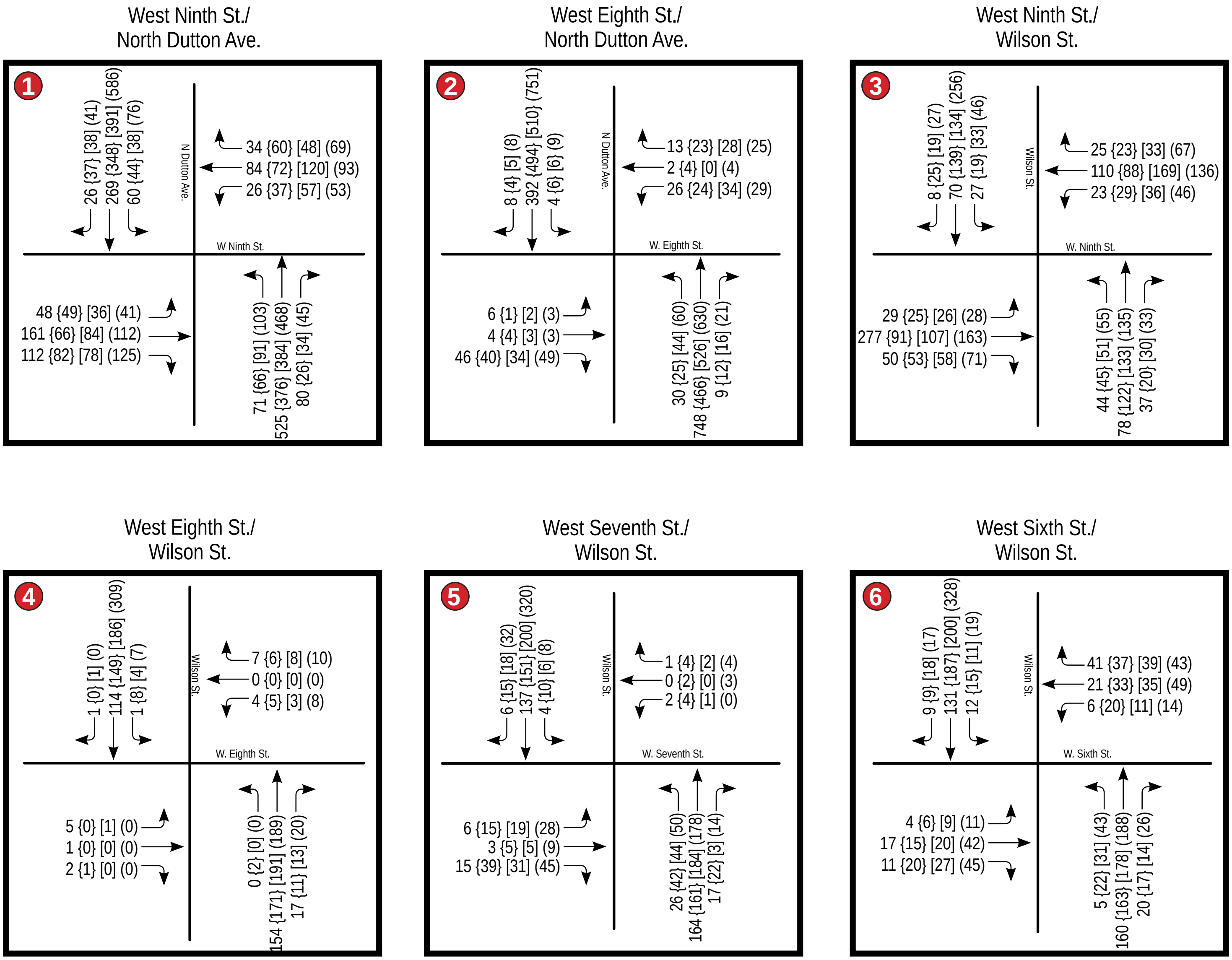
Existing peak hour traffic volumes, shown with Figure 4 of this Study, were reallocated to reflect the option in which West Eighth Street would be closed to traffic at the approach to the SMART rail corridor. This reallocation was based largely on the assumption that traffic seeking to cross the SMART rail corridor at West Eighth Street would recognize the need to use a different crossing, and, consequently, reroute northward to the rail crossing at West Ninth Street and North Dutton Avenue. Those movements entering or exiting the west leg of the intersection of West Eighth Street and Wilson Street in the Existing Condition were assumed to make similar movements at the intersection of West Ninth Street and Wilson Street under the Closure Option C scenario. Like the other options, this could be thought of as a conservative, worst-case scenario in which all of the traffic that reaches Wilson Street has no prior knowledge of the closure, and no traffic is assumed to use the adjacent roads such as Donahue Street to re-route. The stop control and lane configurations that exist at the study area intersections in the existing condition were assumed to remain the same under Closure Option C.

4.4.2 Traffic Volumes - Preferred Project with Closure Option C (West Eighth Street)

Based on the assumptions stated above, Preferred Project with Closure Option C (West Eighth Street) traffic volumes are indicated in Figure 7.

4.4.3 Study Intersections Level of Service - Preferred Project with Closure Option C (West Eighth Street)

Upon reallocation of the peak hour traffic volumes to reflect Closure Option C, in which West Eighth Street would be closed to traffic at the approach to the SMART rail corridor, all of the movements within the study intersections are expected to continue operating at the same levels of service as under Existing Conditions, with exception of the intersection of West Ninth Street and Wilson Street. This movement goes from LOS B in the Existing Condition to LOS C in the PM peak hour, but this change represents an increase of less than two seconds of average control delay. The Closure Option C (West Eighth Street) Scenario Level of Service calculations are summarized in Table 6, and full results are provided in Appendix E.



Legend:

1 Study Intersection

xxx Weekday AM Peak Hour Volume

{xxx} Weekday Midday Peak Hour Volume

[xxx] Weekday School Dismissal Peak Hour Volume

(xxx) Weekday PM Peak Hour Volume

Table 6 Summary of Peak Hour Intersection Level of Service Calculations - Preferred Project with Closure Option C (West Eighth Street)

Intersection	Preferred Project with Closure Option C (West Eighth Street)			
	AM Peak	**Midday Peak**	**School Dismissal Peak**	**PM Peak**
	Delay/LOS	**Delay/LOS**	**Delay/LOS**	**Delay/LOS**
1. West Ninth Street/North Dutton Avenue	9.9/A	8.8/A	9.5/A	9.4/A
2. West Eighth Street/North Dutton Avenue				
Eastbound Approach	*11.0/B*	*10.8/B*	*11.1/B*	*12.7/B*
Westbound Approach	*17.1/C*	*13.1/B*	*14.8/B*	*17.6/C*
Northbound Left-turn	8.3/A	8.8/A	8.7/A	9.8/A
Southbound Left-turn	9.4/A	8.4/A	8.6/A	9.8/A
3. West Ninth Street/Wilson Street	10.8/B	9.9/A	11.6/B	16.4/C
4. West Eighth Street/Wilson Street				
Eastbound Approach	*10.7/B*	*9.1/A*	*11.9/B*	*0.0/A*
Westbound Approach	*9.7/B*	*10.2/B*	*10.1/B*	*11.3/B*
Northbound Left-turn	0.0/A	0.1/A	0.0/A	0.0/A
Southbound Left-turn	0.1/A	0.4/A	0.2/A	0.2/A
5. West Seventh Street/Wilson Street				
Eastbound Approach	*10.3/B*	*10.8/B*	*11.9/B*	*14.4/B*
Westbound Approach	*11.0/B*	*11.7/B*	*10.9/B*	*12.0/B*
Northbound Left-turn	1.1/A	1.7/A	1.7/A	2.0/A
Southbound Left-turn	0.2/A	0.5/A	0.2/A	0.2/A
6. West Sixth Street/Wilson Street	8.5/A	9.1/A	9.5/A	11.9/B

Notes: *Italics* = results for minor movements at unsignalized intersections
Bold = results exceed acceptable level of service
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

4.4.4 Pedestrians and Bicycles - Preferred Project with Closure Option C (West Eighth Street)

While West Eighth Street currently experiences the least pedestrian traffic of the three closure options over the course of a typical weekday, it is important to note that a West Eighth Street closure would involve a detour of pedestrian traffic to West Ninth Street. This would involve a much longer distance and travel time to cross the SMART rail corridor than would a detour involving a West Sixth Street or West Seventh Street closure. Such a detour (using the proposed SMART pathway) would add approximately 1,970 feet onto a trip seeking to cross the SMART rail corridor using West Eighth Street. It is anticipated that this additional trip length represents an additional 2.5 minutes of travel time for a cyclist, and approximately 8.5 minutes of travel time for walking pedestrians. This additional distance and time is close to, but would not exceed, half a mile or 15 minutes, and would be a reasonable additional trip length for a bicycle or pedestrian that would not tend to cause them to switch modes to a motor vehicle.

Although modal shift considerations would not be applicable to this detour, this additional length of walk, comparatively longer than the other closure options, would be an important consideration, especially for disabled pedestrians.

It is also important to note that overflow parking for the City's DeTurk Round Barn facility, which hosts special events such as weddings and is to the west of the SMART rail corridor on Donahue Street, has designated overflow parking to the east of the SMART rail corridor at the parking lot that is customarily used for the Kid Street Learning Center at West Eighth Street and Davis Street. With the closure of the existing crossing at West Eighth Street, patrons attempting to reach the DeTurk facility from the overflow parking lot would have to walk an additional 500 feet then they do in the current condition. This type of trip would not be subject to the consideration of a modal shift. Although modal shift considerations would not be applicable this detour, this additional length of walk is not desirable because West Ninth Street experiences significantly more motor vehicle traffic when compared to West Eighth Street, representing an increased concern for safety.

4.4.5 Transit and Truck Circulation (Preferred Project plus Closure Option C (West Eighth Street)

Based on a review of City routes, only Route 3 (West Ninth Street) would be directly impacted by a closure of West Eighth Street. Closure of West Eighth Street would require the transit route to be extended along Wilson Street to West Ninth Street. Because of the existing lane width, this would necessitate the removal of parking along the west side of Wilson Street. The Wilson Street improvements identified in Appendix V of the 2010 Bicycle and Pedestrian Master Plan includes a provision for parking pockets within the wider sections of sidewalk to accommodate wider travel lane for transit use. Without implementation of the Wilson Street Corridor improvements, parking would need to be removed to accommodate the transit route between West Eighth Street and West Ninth Street.

As for truck traffic, the closure of West Eighth Street would require trucks to use Donahue Street as an alternate route to access businesses and provide deliveries, as it is used now. Therefore existing circulation would not be significantly limited with the closure.

4.5 CEQA Appendix G Evaluation of Preferred Project plus Closure Options

a- The Preferred Project would be expected to be consistent with the City of Santa Rosa General Plan Update 2035 and the Santa Rosa Bicycle and Pedestrian Master Plan, because it provides for the continuation of the proposed Jennings Avenue as a Bicycle Boulevard across the SMART Rail Corridor.

b- As intended, the proposed at-grade crossing would allow for the continued use of the existing crossing of the SMART Corridor and would be expected to draw pedestrian and cyclists from more congested areas to this preferred route.

c- The Preferred Project would not impact existing air travel patterns.

d- Based on preliminary design of the Preferred Project, an at-grade rail crossing would be designed to eliminate hazards associated with an uncontrolled crossing and would provide an accessible route for all non-motorized users.

e- Under the Preferred Project, emergency access is expected to be affected by a crossing closure at each option, while the degree of impact would vary based on the responding station and the option selected. The area of the potential rail crossing closures is served by three fires stations, #1 at 955 Sonoma Avenue, #2 at 65 Stony Circle, and #8 at 830 Burbank Avenue. With a closure at W. Sixth Street, the distance of a probable route between the closure site and the closest fire station would be increased by approximately 580 feet. No change in distance would occur if the closure occurred at W. Seventh Street. With a closure at W. Eighth Street, the distance of a probable route between the closure site and the closest fire station would be increased by approximately 1,040 feet. These increased distances at W. Sixth Street and W. Eighth Street would not cause the SRPD to be unable to meet their response time goals (personal communication, Deputy Fire Chief William Shubin, August 2014).

Emergency access could also be affected if the Project limited access to driveways or prevented equipment access for emergency vehicles. However, a closure at W. Sixth, W. Seventh or W. Eighth Street would not limit access to driveways or prevent equipment access at specific properties.

Nonetheless, during preliminary discussions of the potential closure options, the Santa Rosa Fire and Police Departments stated that their preferred scenario would be to leave all streets open, to allow for the greatest amount of flexibility in both response and positioning of fire equipment. A letter (Santa Rosa Fire Department 2013) discussing the concerns of the City of Santa Rosa emergency services is summarized for each option below:

- Closure Option A (West Sixth Street) – West Sixth Street is believed to have a more substantial impact on emergency access, as it provides a continuous east-west route under Highway 101 and provides direct access to the Station Area Planned Development Area (mixed-use).

- Closure Option B (West Seventh Street) – West Seventh Street is believed to have a less substantial impact on emergency access, as it would not affect the continuous east-west route of West Sixth Street, however it still provides access to the Western

Farm Center. While West Sixth and Seventh Streets provide access to the same grid street network, West Seventh was considered less essential per the Fire Department.

- Closure Option C (West Eighth Street) – West Eighth Street is believed to have a more substantial impact on emergency access, as there is no other east-west route in close proximity, and it provides access to Western Farm Center and adjacent warehouses.

The letter states that W. Sixth Street would affect emergency access, as it provides a continuous east-west route under Highway 101 and provides direct access to the future Downtown Station Area Specific Plan SMART Joint Development Project; and that W. Eighth Street would affect emergency access, as there is no other east-west route in close proximity, and it provides access to Western Farm Center and adjacent warehouses. In summary, the Fire Department letter concludes that the closure of W. Seventh Street would have the least impact on the Fire Department. While the concerns expressed in the Fire Department's letter are important, such concerns were found not to be sufficient to result in delaying response times such that the Fire Department would be unable to meet their response time goals or sufficient to limit access or prevent equipment access at specific properties. Therefore, the impact of a rail crossing closure at either W. Sixth Street, W. Seventh Street, or W. Eighth Street on emergency access would be less than significant.

f- See discussion under item "a" above.

4.6 Preferred Project plus Closure Option Summary

The potential traffic impacts associated with the closure of one of the three streets mentioned above will not immediately result in any unacceptable levels of service for the surrounding roadway network. Table 7 below summarizes and compares each of the various closure options against the existing peak hour scenarios.

Table 7 Summary of Preferred Project Peak Hour Level of Service Calculations

	AM Peak				**Midday Peak**				**School Dismissal Peak**				**PM Peak**			
Intersection	**Existing**	**Closure Option A**	**Closure Option B**	**Closure Option C**	**Existing**	**Closure Option A**	**Closure Option B**	**Closure Option C**	**Existing**	**Closure Option A**	**Closure Option B**	**Closure Option C**	**Existing**	**Closure Option A**	**Closure Option B**	**Closure Option C**
	Delay/ LOS	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**	**Delay/ LOS**
1. W. 9th St./N. Dutton	9.9/A	9.9/A	9.9/A	9.9/A	8.8/A	8.8/A	8.8/A	8.8/A	9.5/A	9.5/A	9.5/A	9.5/A	9.4/A	9.4/A	9.4/A	9.4/A
2. W. 8th St./N. Dutton																
Eastbound Approach	*11.0/B*	*11.0/B*	*11.0/B*	*11.0/B*	*10.8/B*	*10.8/B*	*10.8/B*	*10.8/B*	*11.1/B*	*11.1/B*	*11.1/B*	*11.1/B*	*12.7/B*	*12.7/B*	*12.7/B*	*12.7/B*
Westbound Approach	*17.5/C*	*17.5/C*	*17.5/C*	*17.1/C*	*12.6/B*	*12.6/B*	*12.6/B*	*13.1/B*	*14.8/B*	*14.8/B*	*14.8/B*	*14.8/B*	*16.4/C*	*16.4/C*	*16.4/C*	*17.6/C*
Northbound Left-turn	8.3/A	8.3/A	8.3/A	8.3/A	8.8/A	8.8/A	8.8/A	8.8/A	8.7/A	8.7/A	8.7/A	8.7/A	9.8/A	9.8/A	9.8/A	9.8/A
Southbound Left-turn	9.4/A	9.4/A	9.4/A	9.4/A	8.4/A	8.4/A	8.4/A	8.4/A	8.6/A	8.6/A	8.6/A	8.6/A	9.8/A	9.8/A	9.8/A	9.8/A
3. W. 9th St./Wilson St.	10.4/B	10.4/B	10.4/B	10.8/B	9.5/A	9.5/A	9.5/A	9.9/A	11.0/B	11.0/B	11.0/B	11.6/B	14.6/B	14.6/B	14.6/B	16.4/C
4. W. 8th St./Wilson St.																
Eastbound Approach	*10.7/B*	*10.7/B*	*10.7/B*	*10.7/B*	*10.8/B*	*10.8/B*	*10.8/B*	*9.1/A*	*11.3/B*	*11.3/B*	*11.3/B*	*11.9/B*	*12.3/B*	*12.3/B*	*12.3/B*	*0.0/A*
Westbound Approach	*10.0/B*	*10.0/B*	*10.0/B*	*9.7/B*	*11.0/B*	*11.0/B*	*11.0/B*	*10.2/B*	*10.8/B*	*10.8/B*	*10.8/B*	*10.1/B*	*12.2/B*	*12.2/B*	*12.2/B*	*11.3/B*
Northbound Left-turn	0.9/A	0.9/A	0.9/A	0.0/A	1.0/A	1.0/A	1.0/A	0.1/A	1.0/A	1.0/A	1.0/A	0.0/A	0.8/A	0.8/A	0.8/A	0.0/A
Southbound Left-turn	0.1/A	0.1/A	0.1/A	0.1/A	0.4/A	0.4/A	0.4/A	0.4/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A
5. W. 7th St./Wilson St.																
Eastbound Approach	*10.3/B*	*11.7/B*	*0.0/A*	*10.3/B*	*10.8/B*	*12.8/B*	*0.0/A*	*10.8/B*	*11.9/B*	*15.5/C*	*0.0/A*	*11.9/B*	*14.4/B*	*28.0/D*	*0.0/A*	*14.4/B*
Westbound Approach	*11.0/B*	*12.0/B*	*10.4/B*	*11.0/B*	*11.7/B*	*13.5/B*	*10.6/B*	*11.7/B*	*10.9/B*	*12.6/B*	*10.2/B*	*10.9/B*	*12.0/B*	*14.2/B*	*11.3/B*	*12.0/B*
Northbound Left-turn	1.1/A	2.0/A	0.0/A	1.1/A	1.7/A	3.1/A	0.0/A	1.7/A	1.7/A	3.5/A	0.0/A	1.7/A	2.0/A	4.4/A	0.0/A	2.0/A
Southbound Left-turn	0.2/A	0.2/A	0.2/A	0.2/A	0.5/A	0.5/A	0.5/A	0.5/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A
6. W. 6th St./Wilson St.	8.5/A	8.4/A	8.8/A	8.5/A	9.1/A	9.0/A	9.9/A	9.1/A	9.5/A	9.2/A	10.4/B	9.5/A	11.9/B	11.3/B	14.9/B	11.9/B

Notes: *Italics* = results for minor movements at unsignalized intersections
Bold = results exceed acceptable level of service

Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

4.7 Rail Overcrossing Alternative

The proposed overcrossing at Jennings Avenue would preserve the existing access condition, so current pedestrians and cyclists could avoid being forced to re-route and/or undergo a mode switch to motor vehicles. Because no additional vehicles would be added to the area adjacent to Jennings Avenue, no vehicular traffic impact would be expected with this alternative. This alternative would also improve safety and accessibility for pedestrians and cyclists by providing grade separation from the SMART rail corridor. As the implementation of this alternative will not involve the CPUC requirement of closure of one of West Sixth Street, West Seventh Street, or West Eighth Street, this alternative is not anticipated to cause impacts to traffic, pedestrians, bicycles, transit, and trucks in the Downtown area. It is important to note, however, that the distance needed to traverse the overcrossing would be approximately 1,000 feet (without using the stairs), compared to the roughly 250 feet needed for a pedestrian and/or bicycle to cross the SMART rail corridor at West Sixth Street or West Seventh Street.

4.7.1 CEQA Appendix G Evaluation of Rail Overcrossing Alternative

a- This alternative would be consistent with the City of Santa Rosa General Plan Update 2035 and the Santa Rosa Bicycle and Pedestrian Master Plan.

b- The overcrossing alternative would grade separate non-vehicle modes and the SMART Corridor. Pedestrians and cyclists would be expected to be drawn from more congested areas to this preferred route.

c- The alternative would not impact existing air travel patterns.

d- Based on preliminary design of the Overcrossing Alternative, the crossing would be designed to eliminate hazards associated with pedestrian and bicycle safety at an uncontrolled crossing and would provide an accessible route for all non-motorized users. The construction of such an overcrossing to compliance with ADA standards would require that a portion of the existing Jennings Avenue is used for a ramp that allows overcrossing users to descend/ascend to/from street level. Based on preliminary design, this overcrossing would require that the width of Jennings Avenue be reduced to 24 feet just to the east of North Dutton Avenue. In order to ensure that this width reduction does not cause a traffic hazard, on-street parking, which is currently permitted, would be prohibited.

e- Assuming that on-street parking is prohibited on Jennings Avenue west of the SMART rail crossing, the Overcrossing Alternative would not affect emergency access along Jennings Avenue west of the rail corridor. Permitting the continued use of parking on-street after the construction of the overcrossing would effectively cause this portion of Jennings Avenue to function as a one-lane road. This potential lane reduction could cause access issues for emergency vehicles.

f- See discussion under item “a” above.

4.8 No Project Alternative

As described under the 'Non-Motorized Transportation – Existing" section of this report, existing pedestrian and bicycle traffic volumes that cross the SMART rail corridor at Jennings Avenue are relatively low. However, this is at least partially attributable to the current lack of a crossing that is easily traversable. It was noted, furthermore, that grade school children contributed significantly to the pedestrian volumes.

The elimination of access would result in an additional 0.75 miles of trip length for those pedestrians and cyclists attempting continued use of the SMART rail crossing at Jennings Avenue. This non-vehicular traffic would be re-routed to use the Sonoma County Water Agency (SCWA) trail, arterial streets Guerneville Road and Range Avenue, or Herbert Street combined with private residential parking driveways. Whereas pedestrians and cyclists are currently able to reach their destinations using only local streets by crossing unofficially at Jennings Avenue, the No Project Alternative would require users to travel longer distances on different types of streets that may be less safe. While this additional trip length represents an additional five minutes of travel time for a bicycle, a pedestrian traversing the same distance would take an additional 20 minutes to reach the destination. If this No Project Alternative is pursued, safety issues related to this additional trip length could be addressed by the installation of additional lighting on the SCWA trail or the employment of trail monitors during school arrival and dismissal times.

Based on the length of the existing trip, 1 mile, and the nature of the traveled streets, this additional trip length would be expected enough to force a mode switch from pedestrian/bicycle to motor vehicle. Based on a typical method for approximating the number of school children that walk to school, 0.5 miles, or approximately 15 minutes of walking time, is enough to cause a grade school-related trip to use a motor vehicle. Looking at the existing number of pedestrians and bicycles using the SMART rail crossing at Jennings Avenue, the greatest volume that might be forced into this modal shift during any particular analyzed peak period would be approximately 25 vehicles. ,The existing number of grade school related pedestrian trips was included with the calculation. Likewise, secondary and college related pedestrian trips were also included. Since these school trips were assumed to convert to "drop-off" motor vehicle trips, the sum of the existing school related pedestrian trips was doubled. Bicycle trips, of which the existing volume is negligible across the SMART rail corridor, were determined to not undergo a mode shift because the additional travel time does not surpass typical modal shift thresholds for bicycles. The additional time for the average cyclist would be approximately 6 minutes, however the route choice would likely change to account for the lack in connectivity across the SMART corridor at Jennings Avenue.

These additional vehicles would be expected to be routed to the east-west roadways of Guerneville Road and College Avenue. In particular, the intersections of Guerneville Road and North Dutton Avenue, Guerneville Road and Range Avenue, West College Avenue and North Dutton Avenue, and College Avenue and Cleveland Avenue may be affected by these new trips. Based on data from previous studies along Guerneville Road and College Avenue, a cursory operational analysis for the AM peak hour was performed to verify the effect these additional trips will have upon the four intersections listed above. The addition of these modal shift vehicles produces a negligible effect upon these intersections, and is summarized in the table below.

Table 8 Summary of No Project Alternative Peak Hour Level of Service Calculations

Intersection	Existing Conditions	No Project Alternative Conditions	Cumulative Conditions	Cumulative plus No Project Alternative Conditions
	Delay/LOS	**Delay/LOS**	**Delay/LOS**	**Delay/LOS**
Guerneville Road/North Dutton Avenue	45.2/D	45.3/D	**61.4/E**	**61.3/E**
Guerneville Road/Range Avenue	53.7/D	53.8/D	49.3/D	49.2/D
West College Avenue/North Dutton Avenue	29.7/C	32.6/C	32.1/C	35.7/D
College Avenue/Cleveland Avenue	24.0/C	24.4/C	25.9/C	27.1/C

Notes:
Bold = results exceed acceptable level of service
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

The table shows that the intersection of Guerneville Road and North Dutton Avenue is operating at unacceptable levels of service in the Cumulative Condition, causing some concern for the potential effect of any additional vehicles. However, the nature of traffic patterns at the intersection, and the small amount of additional vehicles, allow for the effect to be negligible. While those additional vehicles would not be expected to have a significant effect upon the operation of intersections along Guerneville Road and College Avenue, this type of a mode shift is generally not desirable for the goals of a sustainable community and contradicts the City's desire to emphasize providing alternatives to passenger cars. Those pedestrians and cyclists prohibited from making such a mode shift would be forced to negotiate considerably greater number of safety issues because of the level of vehicular traffic on the arterial streets of Guerneville Road and College Avenue. The implementation of this alternative, furthermore, is not consistent with the bicycle route planned for Jennings Avenue, as outlined in the *City of Santa Rosa General Plan*, the North Santa Rosa Station Area Plan, or the Santa Rosa Bicycle and Pedestrian Master Plan.

5. Cumulative Conditions

The potential cumulative impacts of future development to the Study area were evaluated under the Cumulative Peak Hour scenarios.

5.1 Study Area Cumulative Condition

In order to be consistent with the *City of Santa Rosa General Plan,* the forecast year of 2035 was chosen to represent cumulative conditions in this Study. The forecasted traffic volumes at each of the study intersections for year 2035 were obtained through application of a 1.2% annual population growth rate, as identified as a city-wide population growth rate with the *City of Santa Rosa General Plan*. While it is expected that future transportation management programs, bicycle/pedestrian improvements, and commuter use of the SMART rail corridor could reduce the need for motor vehicles in the Study area, motor vehicle traffic volumes were calculated to be consistent with population growth for a conservative estimate. This growth rate was compared to growth rates used to approximate cumulative conditions in the proposed North Station Area Plan and Downtown Area Plan, and the population growth rate was found to meet and exceed the growth approximated with these plans.

The City's emphasis on providing alternatives to passenger cars, as well as the identification of the Study area as a site for a potential SMART rail station in the *General Plan*, gives further importance to non-motorized transportation in the Study area. It should be noted that pedestrian and bicycle impact analysis was limited to the existing condition only, however impacts as determined by the thresholds of significance would not be expected to be any different under cumulative conditions.

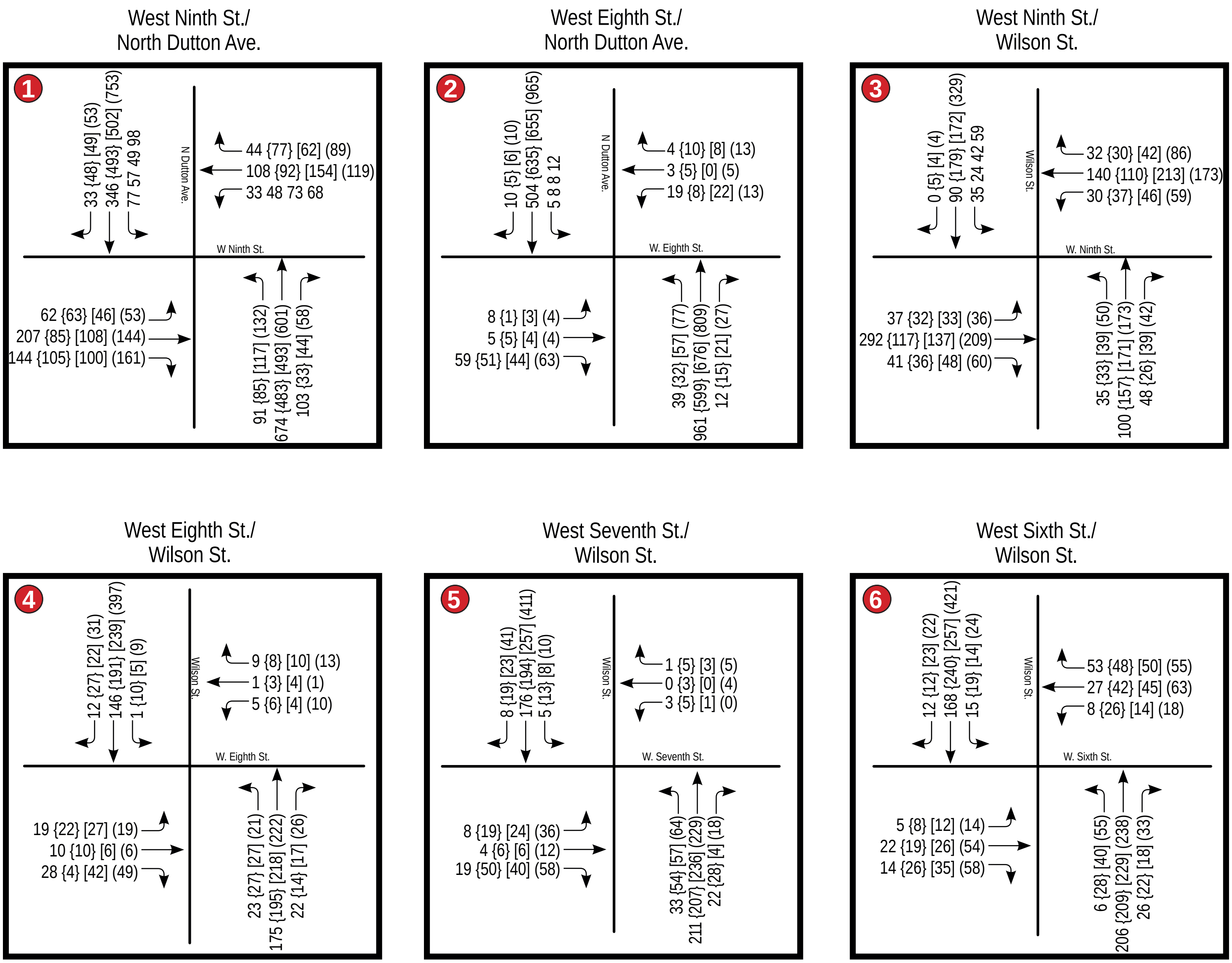
5.1.1 Cumulative Traffic Volumes

Cumulative traffic volumes in the noted peak hours are indicated in Figure 8.

5.1.2 Study Intersections Cumulative Level of Service

Based on the analysis of cumulative traffic volumes, some of the movements within the study intersections are expected to experience decreases in levels of service during the analyzed peak periods when compared to Existing Conditions, with the most difference being at the intersection of West Ninth Street and Wilson Street during the PM peak period. This intersection in this scenario goes from LOS B in the Existing Conditions to LOS E in the Cumulative Conditions. However, it is important to note that the *General Plan* states that those intersections and corridors within the downtown area of the City, including the intersections of West Sixth, West Seventh, West Eighth, and West Ninth Streets with Wilson Street, are not held to a LOS standard. Therefore, this decrease in level of service at this intersection would not be to what would be considered unacceptable levels, but, if desired, could be mitigated in the future with the installation of traffic signals at the intersection of West Ninth Street and Wilson Street. The installation of a traffic signal is currently being dictated by the City as a condition of approval for the anticipated development of the southwest corner of the West Ninth Street and Wilson Street intersection. The

Cumulative Conditions Scenario Level of Service calculations are summarized in Table 9, and full results are provided in Appendix F.



Legend:

1 Study Intersection

xxx Weekday AM Peak Hour Volume

{xxx} Weekday Midday Peak Hour Volume

[xxx] Weekday School Dismissal Peak Hour Volume

(xxx) Weekday PM Peak Hour Volume

N

City of Santa Rosa
Jennings Avenue Crossing
Traffic Impact Analysis Report

Cumulative Intersection
Traffic Volumes

Job Number 8410868
Revision
Date Jul 2014

Figure 8

Table 9 Summary of Cumulative Peak Hour Intersection Level of Service Calculations

Intersection	Cumulative Conditions			
	AM Peak	Midday Peak	School Dismissal Peak	PM Peak
	Delay/LOS	Delay/LOS	Delay/LOS	Delay/LOS
1. West Ninth Street/North Dutton Avenue	11.2/B	9.3/A	10.8/B	10.7/B
2. West Eighth Street/North Dutton Avenue				
Eastbound Approach	*12.3/B*	*11.8/B*	*12.4/B*	*13.0/B*
Westbound Approach	*23.6/C*	*14.6/B*	*18.6/C*	*21.0/C*
Northbound Left-turn	8.8/A	9.4/A	9.3/A	10.7/B
Southbound Left-turn	10.4/B	8.9/A	9.2/A	10.8/B
3. West Ninth Street/Wilson Street	13.2/B	11.1/B	14.7/B	37.3/E*
4. West Eighth Street/Wilson Street				
Eastbound Approach	*11.5/B*	*11.9/B*	*12.8/B*	*14.6/B*
Westbound Approach	*10.6/B*	*12.1/B*	*12.0/B*	*14.4/B*
Northbound Left-turn	1.0/A	1.1/A	1.0/A	0.9/A
Southbound Left-turn	0.1/A	0.4/A	0.2/A	0.2/A
5. West Seventh Street/Wilson Street				
Eastbound Approach	*11.1/B*	*12.0/B*	*13.8/B*	*19.4/C*
Westbound Approach	*12.5/B*	*13.3/B*	*11.5/B*	*14.0/B*
Northbound Left-turn	1.2/A	1.8/A	1.9/A	2.3/A
Southbound Left-turn	0.2/A	0.5/A	0.3/A	0.3/A
6. West Sixth Street/Wilson Street	9.2/A	10.4/B	11.1/B	18.4/C

Notes: *Italics* = results for minor movements at unsignalized intersections
Bold = results exceed acceptable level of service
* = Intersection in downtown, no LOS threshold
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

5.2 Cumulative plus Preferred Project

As was discussed with "Section 4 – Preferred Project", no additional vehicles would be added to the area adjacent to Jennings Avenue into the future. Therefore, no cumulative vehicular traffic impact would be expected with this alternative. This alternative would also improve safety and accessibility for pedestrians and cyclists by providing a traversable, ADA-compliant surface to the SMART rail corridor. As the SMART rail opens to commuter use, pedestrian and bicycle commuter use of this crossing could be expected to increase in the future, providing increased benefit for this alternative into the future. As the implementation of this alternative may involve the CPUC requirement of closure of one of West Sixth Street, West Seventh Street, or West Eighth Street, this section explores the traffic impacts, as well as pedestrian, bicycle, transit, and truck impacts, associated with these various closures.

Additionally, the SMART pathway is a cumulative project and is a proposed Class I pedestrian and bicycle path to be located along the SMART rail corridor. The SMART pathway has not yet been constructed, and it is uncertain exactly when it will be constructed in the vicinity of the Project areas. Based on the preliminary design of the pathway, it is anticipated to be located on the east side of the rail corridor at Jennings Avenue, West Sixth Street, West Seventh Street, and West Eighth Street. If the SMART pathway were in place prior to construction of the Preferred Project, then construction activities associated with an at-grade rail crossing at Jennings Avenue and a rail crossing closure at either West Sixth, Seventh, or Eighth Street would encroach on portions of the pathway, thereby impacting the performance and safety of the SMART pathway. The temporary cumulative impact may be reduced by establishing detours, if needed, along SMART pathway, including along N. Dutton Avenue between Guerneville Road to the north and W. College Avenue to the south. Because a temporary detour could be established, the impact would be reduced to less than significant with mitigation.

5.3 Cumulative plus Preferred Project with Closure Option A (West Sixth Street)

Data that was utilized for the Cumulative Peak Hour scenarios, summarized in Figure 7 of this report, was similarly utilized for the analysis of the considered closure of West Sixth Street under Closure Option A. The reallocation of traffic volumes was performed using the same assumptions as those used for Closure Option A under the Existing Preferred Project Peak Hour scenarios.

5.3.1 Traffic Volumes - Cumulative plus Preferred Project with Closure Option A (West Sixth Street)

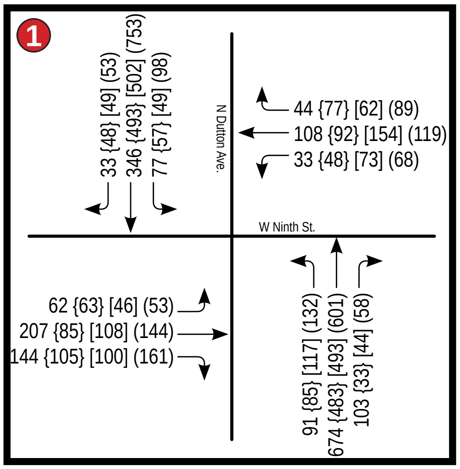
Based on the assumptions stated above, Cumulative plus Preferred Project with Closure Option A (West Sixth Street) traffic volumes are indicated in Figure 9.

5.3.2 Study Intersections Level of Service - Cumulative plus Preferred Project with Closure Option A (West Sixth Street)

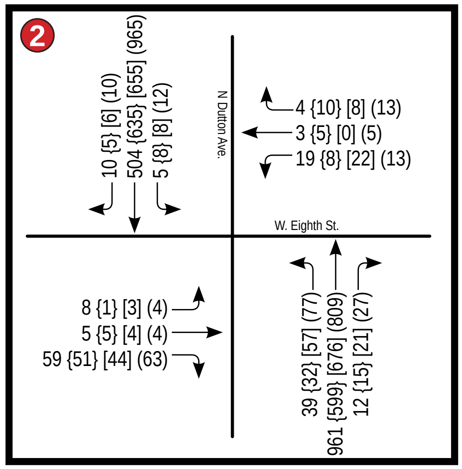
Upon reallocation of the peak hour traffic volumes to reflect Closure Option A, most movements of the intersections within the Study area continue to operate at the same level of service as reported under the Cumulative Peak Hour scenarios. However, the Cumulative plus Preferred Project with Closure Option A traffic volumes exhibit that the closure of West Sixth Street at the SMART rail corridor could increase the

amount of control delay experienced at the eastbound movement at West Seventh Street and Wilson Street. This is especially evident during the PM peak hour, where this movement goes from LOS C to LOS F in the PM peak hour. While this decrease in level of service should be considered unacceptable with regards to *General Plan* policy, subsequent traffic modeling scenarios exhibit that this intersection would operate at LOS C with the installation of all-way stop controls. Because of the West Sixth Street closure, the all-way stop control currently at the intersection of West Sixth Street and Wilson Street could be shifted to West Seventh Street to facilitate all transportation modes, including increased safety for cyclists and pedestrians, which, with the opening of the SMART rail corridor to commuter use, will be a significant consideration in the future. The Cumulative plus Preferred Project with Closure Option A (West Sixth Street) Scenario Level of Service calculations, reflecting the current stop control, are summarized in Table 10, and full results are provided in Appendix G.

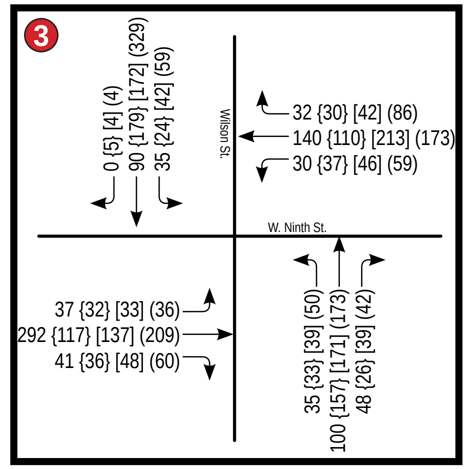
West Ninth St./
North Dutton Ave.



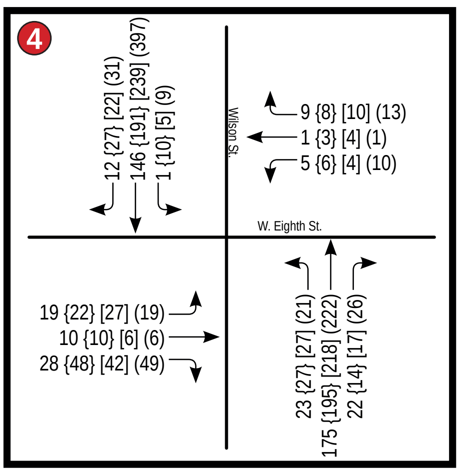
West Eighth St./
North Dutton Ave.



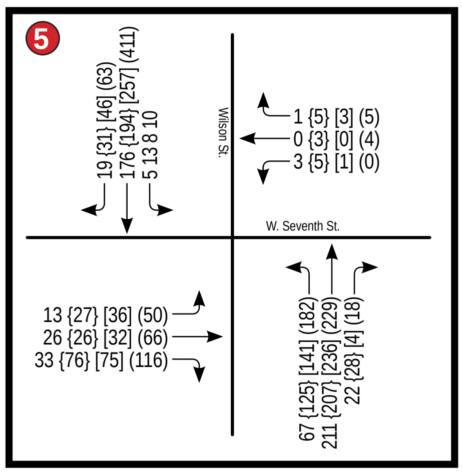
West Ninth St./
Wilson St.



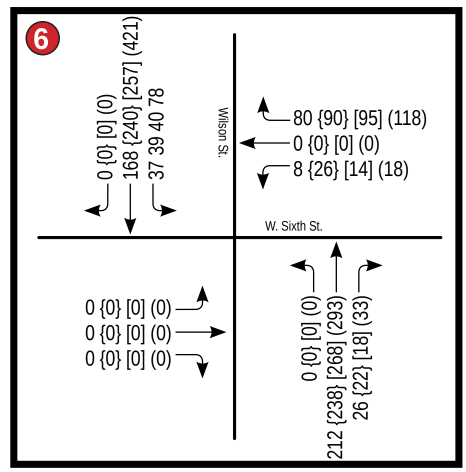
West Eighth St./
Wilson St.



West Seventh St./
Wilson St.



West Sixth St./
Wilson St.



Legend:

1 Study Intersection
xxx Weekday AM Peak Hour Volume
{xxx} Weekday Midday Peak Hour Volume
[xxx] Weekday School Dismissal Peak Hour Volume
(xxx) Weekday PM Peak Hour Volume

N

City of Santa Rosa
Jennings Avenue Crossing
Traffic Impact Analysis Report
Cumulative Plus Closure Option A
Traffic Volumes (West Sixth St.)

Job Number 8410868
Revision
Date Jul 2014

Figure 9

Table 10 Summary of Peak Hour Intersection Level of Service Calculations - Cumulative plus Preferred Project with Closure Option A (West Sixth Street)

Intersection	Cumulative Conditions			
	AM Peak	Midday Peak	School Dismissal Peak	PM Peak
	Delay/LOS	Delay/LOS	Delay/LOS	Delay/LOS
1. West Ninth Street/North Dutton Avenue	11.2/B	9.3/A	10.8/B	10.7/B
2. West Eighth Street/North Dutton Avenue				
Eastbound Approach	*12.3/B*	*11.8/B*	*12.4/B*	*13.0/B*
Westbound Approach	*23.6/C*	*14.6/B*	*18.6/C*	*21.0/C*
Northbound Left-turn	8.8/A	9.4/A	9.3/A	10.7/B
Southbound Left-turn	10.4/B	8.9/A	9.2/A	10.8/B
3. West Ninth Street/Wilson Street	13.2/B	11.1/B	14.7/B	37.3/E*
4. West Eighth Street/Wilson Street				
Eastbound Approach	*11.5/B*	*11.9/B*	*12.8/B*	*14.6/B*
Westbound Approach	*10.6/B*	*12.1/B*	*12.0/B*	*14.4/B*
Northbound Left-turn	1.0/A	1.1/A	1.0/A	0.9/A
Southbound Left-turn	0.1/A	0.4/A	0.2/A	0.2/A
5. West Seventh Street/Wilson Street				
Eastbound Approach	*13.3/B*	*16.1/C*	*22.4/C*	*116.4/F**
Westbound Approach	*14.3/B*	*16.7/C*	*14.1/B*	*18.6/C*
Northbound Left-turn	2.1/A	3.4/A	3.9/A	5.1/A
Southbound Left-turn	0.2/A	0.5/A	0.3/A	0.3/A
6. West Sixth Street/Wilson Street	9.1/A	10.1/B	10.5/B	15.9/C

Notes: *Italics* = results for minor movements at unsignalized intersections
Bold = results exceed acceptable level of service
* = Intersection in downtown, no LOS threshold
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

5.4 Cumulative plus Preferred Project with Closure Option B (West Seventh Street)

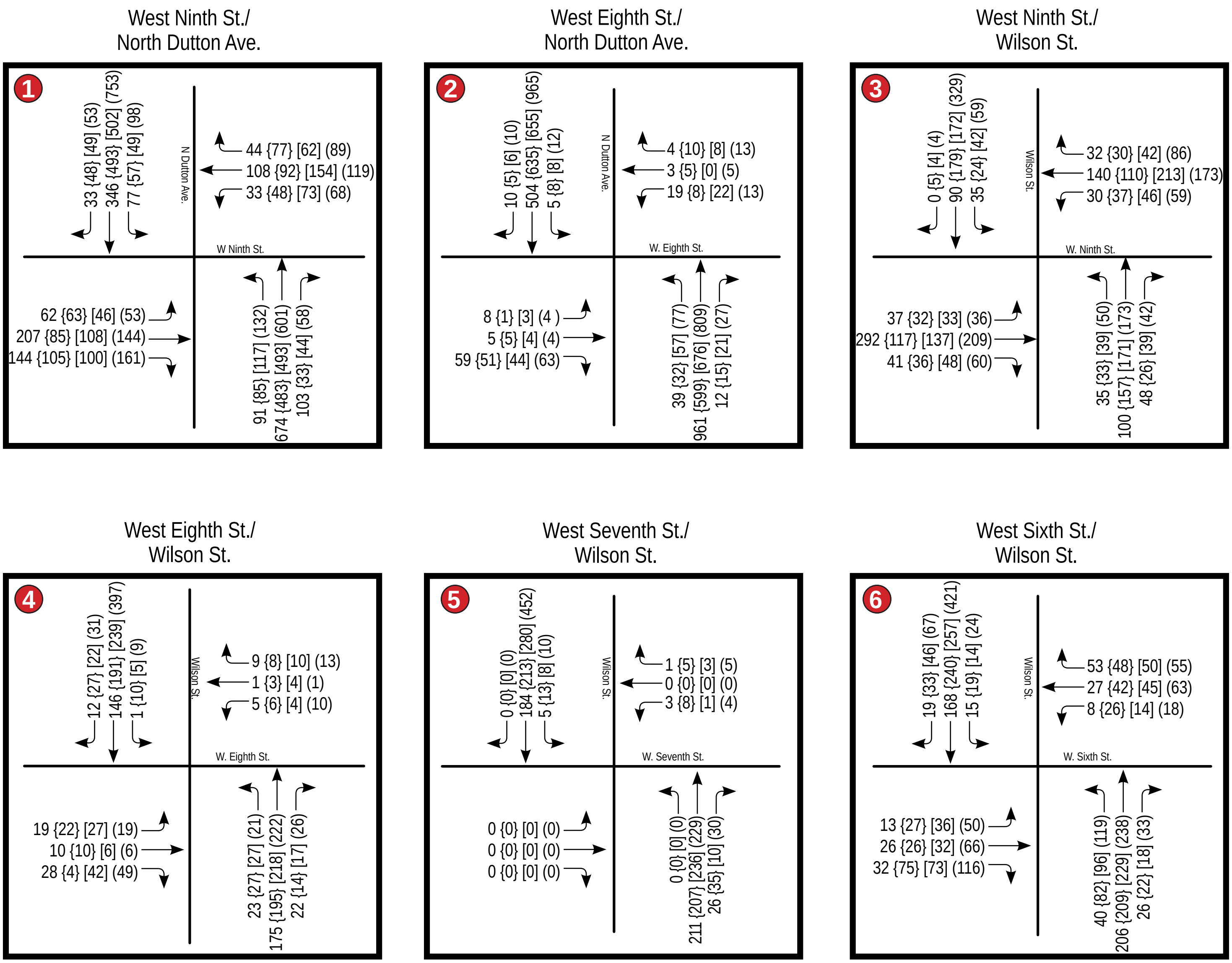
Data that was utilized for the Cumulative Peak Hour scenarios, summarized in Figure 7 of this report, was similarly utilized for the analysis of the considered closure of West Seventh Street under Closure Option B. The reallocation of traffic volumes was performed using the same assumptions as those used for Closure Option B under the Existing Peak Hour scenarios.

5.4.1 Traffic Volumes- Cumulative plus Preferred Project with Closure Option B (West Seventh Street)

Based on the assumptions stated above, Cumulative plus Preferred Project with Closure Option B (West Seventh Street) traffic volumes are indicated in Figure 10.

5.4.2 Study Intersections Level of Service- Cumulative plus Preferred Project with Closure Option B (West Seventh Street)

Upon reallocation of the peak hour traffic volumes to reflect Closure Option B, all of the movements within the study intersections are expected to continue operating at the same levels of service as under the Cumulative peak hour scenarios, with exception of the intersection of West Sixth Street and Wilson Street. This intersection goes from LOS C in the existing condition to LOS E in the PM peak hour, which represents an increase in the amount of average control delay. However, the intersection is within downtown, and, per *General Plan* policy, is not subject to any LOS threshold. The majority of the additional delay reported at this intersection is contributable to the additional delay seen in the north- and southbound directions. Any proposed escalation of traffic control at this location would not be considered a feasible solution, as such a measure would not be consistent with the character of the neighborhood. The Closure Option B (West Seventh Street) Scenario Level of Service calculations are summarized in Table 11, and full results are provided in Appendix H.



Legend:

1 Study Intersection

xxx Weekday AM Peak Hour Volume

{xxx} Weekday Midday Peak Hour Volume

[xxx] Weekday School Dismissal Peak Hour Volume

(xxx) Weekday PM Peak Hour Volume

City of Santa Rosa
Jennings Avenue Crossing
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Cumulative Plus Closure Option B
Traffic Volumes (West Seventh St.)

Figure 10

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Table 11 Summary of Peak Hour Intersection Level of Service Calculations - Cumulative plus Preferred Project with Closure Option B (West Seventh Street)

Intersection	Cumulative Conditions			
	AM Peak	**Midday Peak**	**School Dismissal Peak**	**PM Peak**
	Delay/LOS	**Delay/LOS**	**Delay/LOS**	**Delay/LOS**
1. West Ninth Street/North Dutton Avenue	11.2/B	9.3/A	10.8/B	10.7/B
2. West Eighth Street/North Dutton Avenue				
Eastbound Approach	*12.3/B*	*11.8/B*	*12.4/B*	*13.0/B*
Westbound Approach	*23.6/C*	*14.6/B*	*18.6/C*	*21.0/C*
Northbound Left-turn	8.8/A	9.4/A	9.3/A	10.7/B
Southbound Left-turn	10.4/B	8.9/A	9.2/A	10.8/B
3. West Ninth Street/Wilson Street	13.2/B	11.1/B	14.7/B	37.3/E*
4. West Eighth Street/Wilson Street				
Eastbound Approach	*11.5/B*	*11.9/B*	*12.8/B*	*14.6/B*
Westbound Approach	*10.6/B*	*12.1/B*	*12.0/B*	*14.4/B*
Northbound Left-turn	1.0/A	1.1/A	1.0/A	0.9/A
Southbound Left-turn	0.1/A	0.4/A	0.2/A	0.2/A
5. West Seventh Street/Wilson Street				
Eastbound Approach	*0.0/A*	*0.0/A*	*0.0/A*	*0.0/A*
Westbound Approach	*11.4/B*	*11.5/B*	*10.6/B*	*12.8/B*
Northbound Left-turn	0.0/A	0.0/A	0.0/A	0.0/A
Southbound Left-turn	0.2/A	0.5/A	0.3/A	0.3/A
6. West Sixth Street/Wilson Street	9.7/A	12.1/B	13.2/B	38.9/E*

Notes: *Italics* = results for minor movements at unsignalized intersections
Bold = results exceed acceptable level of service
* = Intersection in downtown, no LOS threshold
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

5.5 Cumulative plus Preferred Project with Closure Option C (West Eighth Street)

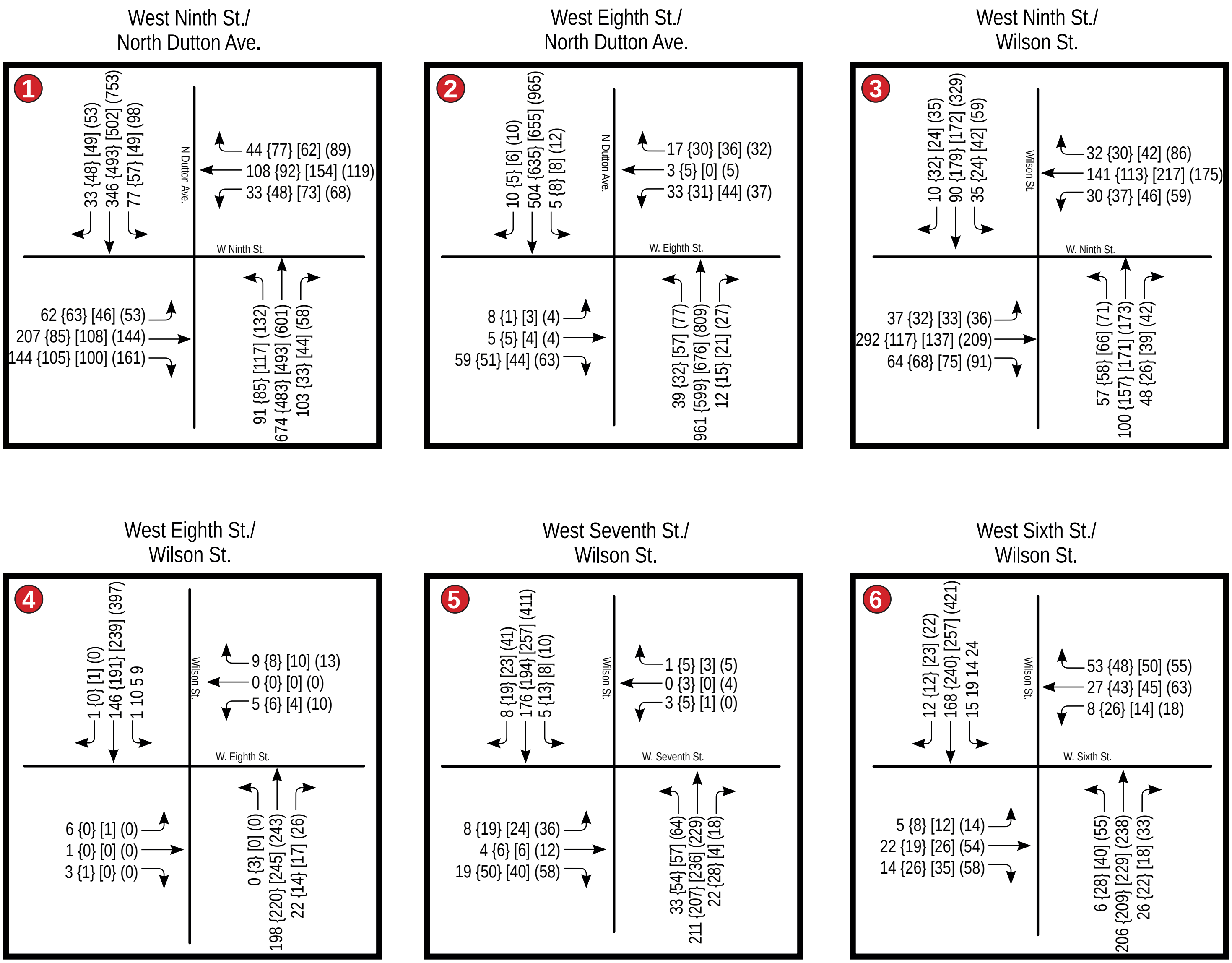
Data that was utilized for the Cumulative Peak Hour scenarios, summarized in Figure 7 of this report, was similarly utilized for the analysis of the considered closure of West Eighth Street under Closure Option C. The reallocation of traffic volumes was performed using the same assumptions as those used for Closure Option C under the Existing Peak Hour scenarios.

5.5.1 Traffic Volumes- Cumulative plus Preferred Project with Closure Option C (West Eighth Street)

Based on the assumptions stated above, Cumulative plus Preferred Project with Closure Option C (West Eighth Street) traffic volumes are indicated in Figure 11.

5.5.2 Study Intersections Level of Service- Cumulative plus Preferred Project with Closure Option C (West Eighth Street)

Upon reallocation of the peak hour traffic volumes to reflect Closure Option C, in which West Eighth Street would be closed to traffic at the approach to the SMART rail corridor, all of the movements within the study intersections are expected to continue operating at the same levels of service as under Cumulative Conditions, with exception of the intersection of West Ninth Street and Wilson Street. This intersection goes from LOS B to LOS C in the School Dismissal peak hour, and from LOS E to LOS F in the PM peak hour. However, West Ninth Street and Wilson Street is considered to be within the downtown area, and, accordingly, no LOS threshold would apply. The Closure Option C (West Eighth Street) Scenario Level of Service calculations are summarized in Table 12, and full results are provided in Appendix I.



Legend:

1 Study Intersection
xxx Weekday AM Peak Hour Volume
{xxx} Weekday Midday Peak Hour Volume
[xxx] Weekday School Dismissal Peak Hour Volume
(xxx) Weekday PM Peak Hour Volume

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Cumulative Plus Closure Option C
Traffic Volumes (West Eighth St.)

Figure 11

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Table 12 Summary of Peak Hour Intersection Level of Service Calculations - Cumulative plus Preferred Project with Closure Option C (West Eighth Street)

Intersection	Cumulative Conditions			
	AM Peak	**Midday Peak**	**School Dismissal Peak**	**PM Peak**
	Delay/LOS	**Delay/LOS**	**Delay/LOS**	**Delay/LOS**
1. West Ninth Street/North Dutton Avenue	11.2/B	9.3/A	10.8/B	10.7/B
2. West Eighth Street/North Dutton Avenue				
Eastbound Approach	*12.3/B*	*11.8/B*	*12.4/B*	*13.0/B*
Westbound Approach	*23.6/C*	*14.6/B*	*18.6/C*	*21.0/C*
Northbound Left-turn	8.8/A	9.4/A	9.3/A	10.7/B
Southbound Left-turn	10.4/B	8.9/A	9.2/A	10.8/B
3. West Ninth Street/Wilson Street	14.4/B	12.1/B	16.8/C	55.9/F*
4. West Eighth Street/Wilson Street				
Eastbound Approach	*11.3/B*	*9.3/A*	*13.4/B*	*0.0/A*
Westbound Approach	*10.2/B*	*10.9/B*	*10.8/B*	*12.7/B*
Northbound Left-turn	0.0/A	0.1/A	0.0/A	0.0/A
Southbound Left-turn	0.1/A	0.5/A	0.2/A	0.3/A
5. West Seventh Street/Wilson Street				
Eastbound Approach	*11.1/B*	*12.0/B*	*13.8/B*	*19.4/C*
Westbound Approach	*12.5/B*	*13.3/B*	*11.5/B*	*14.0/B*
Northbound Left-turn	1.2/A	1.8/A	1.9/A	2.3/A
Southbound Left-turn	0.2/A	0.5/A	0.3/A	0.3/A
6. West Sixth Street/Wilson Street	9.2/A	10.4/B	11.1/B	18.4/C

Notes: *Italics* = results for minor movements at unsignalized intersections
Bold = results exceed acceptable level of service
* = Intersection in downtown, no LOS threshold
Results are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

5.6 Cumulative plus Preferred Project with Closure Option Summary

As was discussed in Preferred Project plus Closure Option Summary, the potential traffic impacts associated with the closure of one of the three streets mentioned above will not cumulatively result in any unacceptable levels of service for the surrounding roadway network. This Study concludes that, of the three streets considered for closure, the closure of West Sixth Street (Closure Option A) would result in the least amount of traffic and safety impact to motor vehicles, and pedestrians within the Study area. However, the closure would conflict with the General Plan the proposed Bike Boulevard West Sixth Street. With this closure, moving the north- and southbound stop signs from their existing location at the intersection of West Sixth Street and Wilson Street to the intersection of West Seventh Street and Wilson Street would ensure an acceptable level of service for all traffic movements in the future, as well as safety for pedestrians and bicycles. However, the closure of West Seventh Street could be considered, as such a closure would allow for the connectivity of east-west traffic via the newly constructed Sixth Street undercrossing at U.S. Route 101. The closure of West Eighth Street similarly provides for east-west connectivity along Sixth Street, but has considerable issues regarding the detouring of pedestrians, and such a closure would sever existing delivery truck and bus routes into the neighborhood. Table 13 below summarizes and compares each of the various closure options against the cumulative peak hour scenarios.

Closure of a rail crossing at any of the three streets would disperse traffic onto smaller streets, such as Adams Street, within the West End neighborhood. The neighborhood provides a network of streets that allows multiple paths for connecting to destinations within and adjacent to the area. Cumulative traffic volumes at these intersections with additional trips from a rail crossing closure are found to generate little or no additional delay and would not generate unacceptable LOS. P.M. peak period traffic volumes at the intersections in the West End neighborhood are 30 to 60 percent of the highly utilized intersections along Wilson Street in the cumulative condition and can therefore accommodate the increased trips from a rail crossing closure without substantial increased congestion.

Table 13 Summary of Cumulative plus Preferred Project Peak Hour Intersection Level of Service Calculations

Intersection	AM Peak				Midday Peak				School Dismissal Peak				PM Peak			
	Existing	Closure Option A	Closure Option B	Closure Option C	Existing	Closure Option A	Closure Option B	Closure Option C	Existing	Closure Option A	Closure Option B	Closure Option C	Existing	Closure Option A	Closure Option B	Closure Option C
	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS	Delay/ LOS
1. W. 9th St./N. Dutton	11.2/B	11.2/B	11.2/B	11.2/B	9.3/A	9.3/A	9.3/A	9.3/A	10.8/B	10.8/B	10.8/B	10.8/B	10.7/B	10.7/B	10.7/B	10.7/B
2. W. 8th St./N. Dutton																
Eastbound Approach	*12.3/B*	*12.3/B*	*12.3/B*	*12.3/B*	*11.8/B*	*11.8/B*	*11.8/B*	*11.8/B*	*12.4/B*	*12.4/B*	*12.4/B*	*12.4/B*	*13.0/B*	*13.0/B*	*13.0/B*	*13.0/B*
Westbound Approach	*23.6/C*	*23.6/C*	*23.6/C*	*23.6/C*	*14.6/B*	*14.6/B*	*14.6/B*	*14.6/B*	*18.6/C*	*18.6/C*	*18.6/C*	*18.6/C*	*21.0/C*	*21.0/C*	*21.0/C*	*21.0/C*
Northbound Left-turn	8.8/A	8.8/A	8.8/A	8.8/A	9.4/A	9.4/A	9.4/A	9.4/A	9.3/A	9.3/A	9.3/A	9.3/A	10.7/B	10.7/B	10.7/B	10.7/B
Southbound Left-turn	10.4/A	10.4/B	10.4/B	10.4/B	8.9/A	8.9/A	8.9/A	8.9/A	9.2/A	9.2/A	9.2/A	9.2/A	10.8/B	10.8/B	10.8/B	10.8/B
3. W. 9th St./Wilson St.	13.2/B	13.2/B	13.2/B	14.4/B	11.1/B	11.1/B	11.1/B	12.1/B	14.7/B	14.7/B	14.7/B	16.8/C	37.3/E*	37.3/E*	37.3/E*	55.9/F*
4. W. 8th St./Wilson St.																
Eastbound Approach	*11.5/B*	*11.5/B*	*11.5/B*	*11.3/B*	*11.9/B*	*11.9/B*	*11.9/B*	*9.3/A*	*12.8/B*	*12.8/B*	*12.8/B*	*13.4/B*	*14.6/B*	*14.6/B*	*14.6/B*	*0.0/A*
Westbound Approach	*10.6/B*	*10.6/B*	*10.6/B*	*10.2/B*	*12.1/B*	*12.1/B*	*12.1/B*	*10.9/B*	*12.0/B*	*12.0/B*	*12.0/B*	*10.8/B*	*14.4/B*	*14.4/B*	*14.4/B*	*12.7/B*
Northbound Left-turn	1.0/A	1.0/A	1.0/A	0.0/A	1.1/A	1.1/A	1.1/A	0.1/A	1.0/A	1.0/A	1.0/A	0.0/A	0.9/A	0.9/A	0.9/A	0.0/A
Southbound Left-turn	0.1/A	0.1/A	0.1/A	0.1/A	0.4/A	0.4/A	0.4/A	0.5/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.2/A	0.3/A
5. W. 7th St./Wilson St.																
Eastbound Approach	*11.1/B*	*13.3/B*	*0.0/A*	*11.1/B*	*12.0/B*	*16.1/C*	*0.0/A*	*12.0/B*	*13.8/B*	*22.4/C*	*0.0/A*	*13.8/B*	*19.4/C*	*116.4/F**	*0.0/A*	*19.4/C*
Westbound Approach	*12.5/B*	*14.3/B*	*11.4/B*	*12.5/B*	*13.3/B*	*16.7/C*	*11.5/B*	*13.3/B*	*11.5/B*	*14.1/B*	*10.6/B*	*11.5/B*	*14.0/B*	*18.6/C*	*12.8/B*	*14.0/B*
Northbound Left-turn	1.2/A	2.1/A	0.0/A	1.2/A	1.8/A	3.4/A	0.0/A	1.8/A	1.9/A	3.9/A	0.0/A	1.9/A	2.3/A	5.1/A	0.0/A	2.3/A
Southbound Left-turn	0.2/A	0.2/A	0.2/A	0.2/A	0.5/A	0.5/A	0.5/A	0.5/A	0.3/A	0.3/A	0.3/A	0.3/A	0.3/A	0.3/A	0.3/A	0.3/A
6. W. 6th St./Wilson St.	9.2/A	9.1/A	9.7/A	9.2/A	10.4/B	10.1/B	12.1/B	10.4/B	11.1/B	10.5/B	13.2/B	11.1/B	18.4/C	15.9/C	38.9/E*	18.4/C

Notes: *Italics* = results for minor movements at unsignalized intersections
Bold = results exceed acceptable level of service
* = Intersection in downtown, no LOS thresholdResults are indicated in Delay (average seconds per vehicle)/LOS (Level of Service)

5.7 Rail Overcrossing Alternative – Cumulative

As was discussed with "Section 5 – Rail Overcrossing Alternative", with the implementation of this alternative, current pedestrians and cyclists could avoid being forced to re-route and/or undergo a mode switch to motor vehicles into the future. Because no additional vehicles would be added to the area adjacent to Jennings Avenue, no vehicular traffic impact would be expected with this alternative. This alternative would also improve safety and accessibility for pedestrians and cyclists by providing grade separation from the SMART rail corridor. As the SMART rail opens to commuter use, pedestrian and bicycle commuter use of this crossing could be expected to increase in the future, providing increased benefit for this alternative into the future. As the implementation of this alternative will not involve the CPUC requirement of closure of one of West Sixth Street, West Seventh Street, or West Eighth Street, this alternative is not anticipated to cause any considerable impacts to traffic, pedestrians, bicycles, transit, and trucks, as was discussed with the Preferred Project.

Additionally, the SMART pathway is a cumulative project and is a proposed Class I pedestrian and bicycle path to be located along the SMART rail corridor. The SMART pathway has not yet been constructed, and it is uncertain exactly when it will be constructed in the vicinity of the Project areas. If the SMART pathway were in place prior to construction of the Rail Overcrossing Alternative, then construction activities would encroach on portions of the pathway, thereby impacting the performance and safety of the pathway. The temporary cumulative impact may be reduced by establishing detours, if needed, along SMART pathway, including along N. Dutton Avenue between Guerneville Road to the north and W. College Avenue to the south. Because a temporary detour could be established, the temporary cumulative impact would be reduced to less than significant with mitigation.

6. Conclusions & Recommendations

6.1 Preferred Project Alternative, Rail Overcrossing Alternative, and No Project Alternative

6.1.1 Preferred Project

6.1.1.1 Intersection Operations

Under existing conditions the potential closure of any one of the three street closure options analyzed for this alternative is not expected to result in unacceptable levels of service within the study area.

6.1.1.2 Pedestrian and Bicycle Considerations

With the closure of West Sixth Street, the re-routing of pedestrian and bicycle trips would likely involve a shift to adjacent West Seventh Street. This would increase trips seeking to cross the SMART rail corridor from West Sixth Street by approximately 800 feet. While the increase in distance is potentially inconvenient for foot traffic bound to continue along Sixth Street, this is expected to have a less than significant impact on pedestrian and bicycle traffic given that the additional trip length and time for a bicycle or pedestrian would not tend to cause them to switch modes to a motor vehicle. The route would be maintain similar safe and comfortable conditions, traffic volume, and control considerations, as well the network would remain largely connected with pathways, trails, and open space. However, the closure of a rail crossing at West Sixth Street would conflict with the route indicated for the future Sixth Street Class II bicycle lane in the General Plan and the Downtown Station Area Plan, and the route for the future bicycle boulevard in the Bicycle and Pedestrian Master Plan. Therefore, this impact would be significant. To mitigate such a closure, the City would need to amend the General Plan, the Downtown Station Area Plan, and the Bicycle and Pedestrian Master Plan to revise the proposed bicycle route on Sixth Street. The bicycle route shall be re-routed at Sixth and Wilson Streets or at Sixth Street and the SMART path (when it has been installed) to go north one block, then cross the rail corridor on Seventh Street, turn south on Adams Street, and return to W. Sixth Street.

Closure of West Seventh Street would re-route pedestrian and bicycle to adjacent West Sixth Street. Similar to the West Sixth Street closure, this would add the same distance for pedestrians and cyclists at West Seventh Street. The impact would be expected to be less than significant with the same rationale.

A closure of West Eighth Street to traffic would re-route pedestrian and bicycle traffic by approximately 2,400 feet, re-routing pedestrian and bicycle trips north to West Ninth Street. As discussed, this additional distance and time would not exceed half a mile or 15 minutes, and would be a reasonable additional trip length for a bicycle or pedestrian that would not tend to cause them to switch modes to a motor vehicle. While more inconvenient for trips originating closer to the closure, trips further from the tracks may detour at Madison Street to use West Seventh or West Sixth Streets.

6.1.1.3 Transit and Truck Circulation Considerations

Closure of West Sixth Street would be expected to have an impact on access of larger design vehicles making deliveries to businesses in the area, specifically Franco American Bakery. This impact is significant; however the impact can be feasibly mitigated by initiating time-limited parking restrictions along Adams Street to accommodate the occasional late night delivery. This mitigation would reduce the impact to less than significant. The specifics of the parking limits should be coordinated with the local businesses.

Closure of West Seventh Street would be expected to alter access and connectivity of delivery vehicles within the West End Neighborhood. The impact is significant, however, the impact can be feasibly mitigated by initiating time-limited parking restrictions along Adams Street, widening of West Sixth Street, demolition of the median at West Sixth Street, and/or installation of an additional exit gate for the rail crossing at West Sixth Street.

Closure of West Eighth Street would have an impact on the existing circulation of City Bus Route 3, which uses West Eighth Street and Donahue Street to circumvent roadway width constraints on Wilson Street north of West Eighth Street. The impact to transit service circulation is significant, however with implementation of the Wilson Street improvements identified in Appendix V of the 2010 Bicycle and Pedestrian Master Plan, the impact would be less than significant.

6.1.1.4 Intersection Cumulative Condition Operations

Under cumulative conditions, the potential closure of any one of the three street closure options analyzed for this alternative is not expected to result in unacceptable levels of service within the study area.

6.1.2 Rail Overcrossing Alternative

This alternative maintains the existing condition of pedestrian and bicycle activity across the SMART rail corridor at Jennings Avenue, and it does not cause the potential closure of any other at-grade crossings. Therefore, the alternative would have no impacts on vehicular traffic and would result in beneficial impacts to pedestrian and bicycle traffic.

6.1.3 No Project Alternative

6.1.3.1 Intersection Operations

Under existing conditions this alternative is not expected to result in unacceptable levels of service within the study area.

6.1.3.2 CEQA Appendix G Evaluation

It should be noted that this alternative is not consistent with the City of Santa Rosa General Plan, North Santa Rosa Station Area Plan, or the Santa Rosa Bicycle and Pedestrian Master Plan. Further the condition left by the No Project Alternative may result in further trespassing of the SMART Rail Corridor after passenger rail operations have started. This would be expected to be a significant impact, to which the Project is the mitigation.

6.1.3.3 Intersection Cumulative Condition Operations

Under cumulative conditions, unacceptable levels of service will occur within the study area. The No Project Alternative would not cause these levels of service to become substantially worse.

7. References

[i] *City of Santa Rosa General Plan*, City of Santa Rosa Staff, Adopted November 2009

Highway Capacity Manual 2000, Transportation Research Board, 2000.

Helen M. Lehman Elementary Safe Routes to School Study Map, Sonoma County Bicycle Coalition Safe Routes to School Program, Sonoma County GIS, 2011.

Fire Department Memorandum: F13-0800 – 6th, 7th, & 8th Street Closure Impacts, Mark Pedroia, Senior Fire Inspector, City of Santa Rosa Fire Department, December 31, 2013

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